

**COUNTY OF EL DORADO, CALIFORNIA  
DEPARTMENT OF TRANSPORTATION**

**CONTRACT DOCUMENTS  
INCLUDING  
NOTICE TO BIDDERS, SPECIAL PROVISIONS, PROPOSAL, AND  
CONTRACT**

**FOR**

**US 50/MISSOURI FLAT ROAD INTERCHANGE IMPROVEMENTS  
PHASE 1B**

On US Highway 50 in El Dorado County, California  
**September 15, 2009**

**CONTRACT NO. 71336  
03-ED-50- 22.9 km to 25.1 km**

FOR USE WITH  
STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, CALTRANS  
STANDARD SPECIFICATIONS, JULY 1999  
STANDARD PLANS, JULY 2004

**BID OPENING DATE: October 16, 2009**



The special provisions contained herein have been prepared by or under the direction of the following Registered Persons.

**STRUCTURES**



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REGISTERED CIVIL ENGINEER

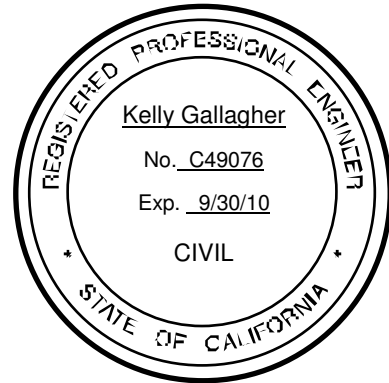


**HIGHWAY**



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REGISTERED CIVIL ENGINEER

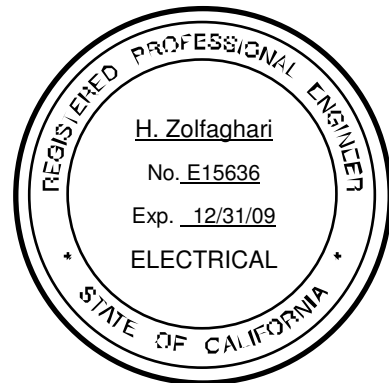


**ELECTRICAL**



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REGISTERED ENGINEER





**DEPARTMENT OF TRANSPORTATION  
COUNTY OF EL DORADO, STATE OF CALIFORNIA**

**US 50/MISSOURI FLAT ROAD INTERCHANGE IMPROVEMENTS PHASE 1B  
CONTRACT NO. 71336**

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## Standard Plans List

The Standard Plan sheets applicable to this contract include, but are not limited to those indicated below. Applicable Revised Standard Plans (RSP) and New Standard Plans (NSP) indicated below are included in the Informational Handout and are available at the following Catrans website:

[http://www.dot.ca.gov/hq/esc/oe/project\\_plans/HTM/06\\_plans\\_disclaim\\_US.htm](http://www.dot.ca.gov/hq/esc/oe/project_plans/HTM/06_plans_disclaim_US.htm)

### GENERAL ROAD WORK (Miscellaneous)

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<b>A20C</b>	<b>Pavement Markers and Traffic Lines, Typical Details</b>
<b>A20D</b>	<b>Pavement Markers and Traffic Lines, Typical Details</b>
<b>A24A</b>	<b>Pavement Markings - Arrows</b>
<b>A24B</b>	<b>Pavement Markings - Arrows</b>
<b>RSP A24C</b>	<b>Pavement Markings – Symbols and Numerals</b>
<b>A24D</b>	<b>Pavement Markings – Words</b>
<b>A24E</b>	<b>Pavement Markings – Words and Crosswalks</b>
<b>A62B</b>	<b>Limits of Payment for Excavation and Backfill – Bridge Surcharge and Wall</b>
<b>A62C</b>	<b>Limits of Payment for Excavation and Backfill - Bridge</b>
<b>A62D</b>	<b>Excavation and Backfill – Concrete Pipe Culverts</b>
<b>A62DA</b>	<b>Excavation and Backfill – Concrete Pipe Culverts</b>
<b>A62F</b>	<b>Excavation and Backfill – Metal and Plastic Culverts</b>
<b>A73A</b>	<b>Object Markers</b>
<b>A73B</b>	<b>Markers</b>
<b>A73C</b>	<b>Delineators, Channelizers and Barricades</b>
<b>RSP A76A</b>	<b>Concrete Barrier Type 60</b>
<b>A76B</b>	<b>Concrete Barrier Type 60</b>
<b>A77A1</b>	<b>Metal Beam Guard Railing – Standard Railing Section (Wood Post with Wood Block)</b>
<b>A77B1</b>	<b>Metal Beam Guard Railing – Standard Hardware</b>
<b>A77C1</b>	<b>Metal Beam Guard Railing – Wood Post and Wood Block Details</b>
<b>A77C3</b>	<b>Metal Beam Guard Railing – Typical Line Post Embedment and Hinge Point Offset Details</b>
<b>A77C4</b>	<b>Metal Beam Guard Railing – Typical Railing Delineation and Dike Positioning Details</b>
<b>NSP A77C5</b>	<b>Metal Beam Guard Railing – Typical Vegetation Control Standard Railing Section</b>
<b>NSP A77C6</b>	<b>Metal Beam Guard Railing – Typical Vegetation Control for Terminal System End Treatments</b>
<b>NSP A77C7</b>	<b>Metal Beam Guard Railing – Typical Vegetation Control at Structure Approach and Departure</b>
<b>NSP A77C8</b>	<b>Metal Beam Guard Railing – Typical Vegetation Control at Fixed Object</b>
<b>NSP A77C9</b>	<b>Metal Beam Guard Railing – Typical Vegetation Control at Fixed Object</b>
<b>NSP A77C10</b>	<b>Metal Beam Guard Railing – Typical Vegetation Control at Fixed Object</b>

A77E1	Metal Beam Guard Railing – Typical Layouts for Embankments
A77E2	Metal Beam Guard Railing – Typical Layouts for Embankments
A77E3	Metal Beam Guard Railing – Typical Layouts for Embankments
A77E4	Metal Beam Guard Railing – Typical Layouts for Embankments
A77E5	Metal Beam Guard Railing – Typical Layouts for Embankments
A77E6	Metal Beam Guard Railing – Typical Layouts for Embankments
A77F1	Metal Beam Guard Railing – Typical Layouts for Structure Approach
A77F3	Metal Beam Guard Railing – Typical Layouts for Structure Approach
A77F4	Metal Beam Guard Railing – Typical Layouts for Structure Departure
A77F5	Metal Beam Guard Railing – Typical Layouts for Structure Departure
A77G3	Metal Beam Guard Railing – Typical Layouts for Roadside Fixed Objects
A77G4	Metal Beam Guard Railing – Typical Layouts for Roadside Fixed Objects
A77G5	Metal Beam Guard Railing – Typical Layouts for Roadside Fixed Objects
A77G6	Metal Beam Guard Railing – Typical Layouts for Roadside Fixed Objects
A77G7	Metal Beam Guard Railing – Typical Layouts for Roadside Fixed Objects
A77G8	Metal Beam Guard Railing – Typical Layouts for Roadside Fixed Objects
A77H1	Metal Railing End Anchor Assembly (Type SFT)
A77H2	Metal Railing Rail Tensioning Assembly
A77H3	Metal Railing Anchor Cable and Anchor Plate Details
A77J1	Metal Beam Guard Railing Connections to Bridge Railings without Sidewalks Details No. 1
A77J2	Metal Beam Guard Railing Connections to Bridge Railings without Sidewalks Details No. 2
A77J3	Metal Beam Guard Railing Connections to Abutments and Walls
A77J4	Metal Beam Guard Railing Transition Railing (Type WB)
A77L1	Metal Beam Railing Terminal System (Type SRT)
A77L2	Metal Beam Railing Terminal System (Type SKT)
A77L3	Metal Beam Railing Terminal System (Type ET)
A77L5	Metal Beam Railing Terminal System (Type FLEAT)
A85	Chain Link Fence
RSP A87A	Curbs and Driveways
A87B	Asphalt Concrete Dikes
RSP A88A	Curb Ramp Details
RSP A88B	Curb Ramp and Island Passageway Details
	<b>GENERAL ROAD WORK (Pavements)</b>
P70	Asphalt Concrete Paving (Longitudinal Tapered Notched Wedge Joint)
	<b>GENERAL ROAD WORK ( Drainage)</b>
D74B	Drainage Inlets
RSP D75B	Pipe Inlets
D75C	Pipe Inlets
RSP D77A	Grate Details
D77B	Bicycle Proof Grate Details
RSP D78C	Inlet Depressions – Asphalt Concrete Shoulders
D79	Precast Reinforced Concrete Pipe – Direct Design Method
D87A	Corrugated Metal Pipe Downdrain Details

<b>D87D</b>	<b>Overside Drains</b>
<b>D88</b>	<b>Construction Loads on Culverts</b>
<b>D94A</b>	<b>Metal and Plastic Flared End Sections</b>
<b>D94B</b>	<b>Concrete Flared End Sections</b>
<b>RSP D97E</b>	<b>Corrugated Metal Pipe Coupling Details No. 5- Standard Joint</b>
<b>RSP D97F</b>	<b>Corrugated Metal Pipe Coupling Details No. 6- Positive Joint</b>
<b>RSP D97G</b>	<b>Corrugated Metal Pipe Coupling Details No. 7- Downdrain</b>
<b>D97H</b>	<b>Reinforced Concrete Pipe or Non-Reinforced Concrete Pipe-Standard and Positive Joints</b>

**GENERAL ROAD WORK (Planting and Irrigation)**

<b>H9</b>	<b>Planting and Irrigation Details</b>
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**GENERAL ROAD WORK (Temporary Facilities)**

<b>RSP T1A</b>	<b>Temporary Crash Cushion, Sand Filled (Unidirectional)</b>
<b>RSP T1B</b>	<b>Temporary Crash Cushion, Sand Filled (Bidirectional)</b>
<b>RSP T2</b>	<b>Temporary Crash Cushion, Sand Filled (Shoulder Installations)</b>
<b>T3</b>	<b>Temporary Railing (Type K)</b>
<b>T4</b>	<b>Temporary Traffic Screen</b>
<b>RSP T10</b>	<b>Traffic Control System for Lane Closure on Freeways and Expressways</b>
<b>RSP T11</b>	<b>Traffic Control System for Lane Closure on Multilane Conventional Highways</b>
<b>RSP T12</b>	<b>Traffic Control System for Lane Closure on Multilane Conventional Highways</b>
<b>RSP T13</b>	<b>Traffic Control System for Lane Closure on Two Lane Conventional Highways</b>
<b>RSP T14</b>	<b>Traffic Control System for Ramp Closure</b>
<b>RSP T15</b>	<b>Traffic Control System for Moving Lane Closure on Multilane Highways</b>
<b>RSP T16</b>	<b>Traffic Control System for Moving Lane Closure on Multilane Highways</b>
<b>T56</b>	<b>Temporary Water Pollution Control Details (Temporary Fiber Roll)</b>
<b>T58</b>	<b>Temporary Water Pollution Control Details (Temporary Construction Entrance)</b>
<b>T59</b>	<b>Temporary Water Pollution Control Details (Temporary Concrete Washout Facility)</b>

**BRIDGE**

<b>B0-1</b>	<b>Bridge Details</b>
<b>B0-3</b>	<b>Bridge Details</b>
<b>B0-5</b>	<b>Bridge Details</b>
<b>B0-13</b>	<b>Bridge Details</b>
<b>B3-1</b>	<b>Retaining Wall Type 1 – H=1200 Through 9100 mm</b>
<b>B3-2</b>	<b>Retaining Wall Type 1 – H=9700 Through 10 900 mm</b>
<b>B3-8</b>	<b>Retaining Wall Details No. 1</b>
<b>B3-9</b>	<b>Retaining Wall Details No. 2</b>
<b>RSP B6-21</b>	<b>Joint Seals (Maximum Movement Rating = 50 mm)</b>
<b>B7-5</b>	<b>Deck Drains</b>
<b>B7-6</b>	<b>Deck Drains – Types D-1 and D-2</b>
<b>B11-47</b>	<b>Cable Railing</b>
<b>B11-54</b>	<b>Concrete Barrier Type 26</b>
<b>B11-56</b>	<b>Concrete Barrier Type 736</b>

**ROADSIDE SIGNS**

<b>RS1</b>	<b>Roadside Signs, Typical Installation Details No. 1</b>
<b>RS2</b>	<b>Roadside Signs - Wood Post, Typical Installation Details No. 2</b>

<b>RS4</b>	<b>Roadside Signs, Typical Installation Details No. 4</b>
	<b>OVERHEAD SIGNS</b>
<b>RSP S1</b>	<b>Overhead Signs – Truss, Instructions and Examples</b>
<b>RSP S2</b>	<b>Overhead Signs – Truss, Single Post Type – Post Type II Thru IX</b>
<b>RSP S3</b>	<b>Overhead Signs – Truss, Single Post Type – Base Plate and Anchorage Details</b>
<b>RSP S4</b>	<b>Overhead Signs – Truss, Single Post Type – Structural Frame Members Details No. 1</b>
<b>S5</b>	<b>Overhead Signs – Truss, Single Post Type – Structural Frame Members Details No. 2</b>
<b>RSP S6</b>	<b>Overhead Signs – Truss, Gusset Plate Details</b>
<b>RSP S8</b>	<b>Overhead Signs – Truss, Single Post Type – Round Pedestal Foundation</b>
<b>RSP S12</b>	<b>Overhead Signs – Truss, Structural Frame Details</b>
<b>RSP S13</b>	<b>Overhead Signs – Truss, Frame Juncture Details</b>
<b>RSP S16</b>	<b>Overhead Signs – Walkway Details No. 1</b>
<b>RSP S17</b>	<b>Overhead Signs – Walkway Details No. 2</b>
<b>NSP S17A</b>	<b>Overhead Signs – Walkway Details No. 3</b>
<b>RSP S18</b>	<b>Overhead Signs – Walkway Safety Railing Details</b>
<b>RSP S19</b>	<b>Overhead Signs – Truss, Sign Mounting Details – Laminated Panel – Type A</b>
<b>RSP S87</b>	<b>Type A –1 Mounting Hardware – Overhead Laminated Type A Panel, Truss and Lightweight Sign Structures</b>
<b>S93</b>	<b>Framing Details for Framed Single Sheet Aluminum Signs, Rectangular Shape</b>
<b>S94</b>	<b>Roadside Single Sheet Aluminum Signs, Rectangular Shape</b>
<b>S95</b>	<b>Roadside Single Sheet Aluminum Signs, Diamond Shape</b>
	<b>SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS</b>
<b>RSP ES-1A</b>	<b>Electrical Systems (Symbols And Abbreviations)</b>
<b>RSP ES-1B</b>	<b>Electrical Systems (Symbols And Abbreviations)</b>
<b>RSP ES-1C</b>	<b>Electrical Systems (Symbols And Abbreviations)</b>
<b>RSP ES-2C</b>	<b>Electrical Systems (Service Equipment Notes, Type III Series)</b>
<b>RSP ES-2D</b>	<b>Electrical Systems (Service Equipment and Typical Wiring Diagram, Type III – A Series)</b>
<b>RSP ES-3C</b>	<b>Electrical Systems (Controller Cabinet Details)</b>
<b>ES-4A</b>	<b>Electrical Systems (Signal Heads and Mountings)</b>
<b>ES-4B</b>	<b>Electrical Systems (Signal Heads and Mountings)</b>
<b>RSP ES-4C</b>	<b>Electrical Systems (Signal Heads and Mountings)</b>
<b>RSP ES-4D</b>	<b>Electrical Systems (Signal Heads and Mountings)</b>
<b>ES-4E</b>	<b>Electrical Systems (Signal Faces and Mountings)</b>
<b>RSP ES-5A</b>	<b>Electrical Systems (Detectors)</b>
<b>ES-5B</b>	<b>Electrical Systems (Detectors)</b>
<b>ES-5C</b>	<b>Electrical Systems (Detectors)</b>
<b>RSP ES-5D</b>	<b>Electrical Systems (Detectors)</b>
<b>RSP ES-6A</b>	<b>Electrical Systems (Lighting Standard Types 15 and 21)</b>
<b>RSP ES-6E</b>	<b>Electrical Systems (Lighting Standards Types 30 and 31)</b>
<b>ES-6F</b>	<b>Electrical Systems (Lighting Standards Types 30 and 31, Base Plate Details)</b>
<b>RSP ES-7A</b>	<b>Electrical Systems (Signal Standards Push Button Posts and Type 15TS Standard))</b>
<b>RSP ES-7B</b>	<b>Electrical Systems (Signal And Lighting Standard – Type 1 Standard and Equipment Numbering)</b>
<b>RSP ES-7F</b>	<b>Electrical Systems (Signal and Lighting Standard – Case 4 Arm Loading, Wind Velocity</b>



	= 161 km/h, Arm Lengths 7.6 m to 13.7 m)
<b>RSP ES-7H</b>	<b>Electrical Systems (Signal and Lighting Standard – Case 5 Arm Loading, Wind Velocity = 161 km/h, Arm Lengths 18.2 m to 19.8 m)</b>
<b>RSP ES-7M</b>	<b>Electrical Systems (Signal and Lighting Standards – Details No. 1)</b>
<b>ES-7N</b>	<b>Electrical Systems (Signal and Lighting Standards – Details No. 2)</b>
<b>RSP ES-7P</b>	<b>Electrical Systems (Pedestrian Barricades)</b>
<b>RSP ES-8</b>	<b>Electrical Systems (Pull Box Details)</b>
<b>RSP ES-10</b>	<b>Electrical Systems (Isolux Diagrams)</b>
<b>RSP ES-11</b>	<b>Electrical Systems (Foundation Installations)</b>
<b>RSP ES-13A</b>	<b>Electrical Systems (Splicing Details)</b>
<b>RSP ES-13B</b>	<b>Electrical Systems (Wiring Details and Fuse Ratings)</b>
<b>ES-15A</b>	<b>Electrical Systems (Sign Illumination Equipment)</b>
<b>RSP ES-15C</b>	<b>Electrical Systems (Sign Illumination Equipment)</b>
<b>RSP ES-15D</b>	<b>Electrical Systems (Lighting and Sign Illumination Control)</b>

DEPARTMENT OF TRANSPORTATION  
COUNTY OF EL DORADO, CALIFORNIA

**NOTICE TO BIDDERS**

NOTICE IS HEREBY GIVEN by the County of El Dorado, State of California, that sealed bids for work in accordance with the Project Plans (Plans) and Contract Documents designated:

**US 50/MISSOURI FLAT ROAD  
INTERCHANGE IMPROVEMENTS  
PHASE 1B  
CONTRACT NO. 71336**

will be received by the Clerk of the Board of Supervisors, at the Board of Supervisors Office, 330 Fair Lane, Placerville, California, until **Friday, October 16, 2009, at 2:00 p.m.**, at which time bids will be publicly opened and read by the El Dorado County Department of Transportation.

No Bid may be withdrawn after the time established for receiving bids or before the award and execution of the Contract, unless the award is delayed for a period exceeding sixty (60) calendar days. Bids shall be executed in accordance with the instructions given and forms provided in the bound Contract Documents furnished by the El Dorado County Department of Transportation. The Proposal shall not be detached and shall be submitted with the Contract Documents bid package in its entirety. All bids must be clearly marked on the envelope:

**"PROPOSAL FOR US 50/MISSOURI FLAT ROAD  
INTERCHANGE IMPROVEMENTS PHASE 1B"  
CONTRACT NO. 71336**

**TO BE OPENED AT 2:00 PM, FRIDAY, OCTOBER 16, 2009**

**LOCATION/DESCRIPTION OF THE WORK:** The project is located in El Dorado County near the City of Placerville. The Work to be done is shown on the Plans, and generally consists of, but is not limited to:

- A. Widening of US 50 and the Weber Creek Bridge and reconstruction of US 50 on and off ramps, roadway improvements, retaining walls, bicycle and pedestrian facilities, traffic signal improvements, including stage construction to facilitate grading, clearing and grubbing, permanent and temporary fence removal and construction, drainage removal and construction, concrete drainage boxes and inlets, grade ditch, excavation, import borrow, rock base, asphalt paving, signing and striping, pavement obliteration, permanent and temporary erosion control. Other items or details not mentioned above, that are required by the Plans, Standard Specifications, or these Special Provisions, shall be performed, constructed or installed.
- B. Bids are required for the entire Work described herein.
- C. The contract time shall be **FOUR HUNDRED AND FIFTY (450) WORKING DAYS**.
- D. For bonding purposes the anticipated project cost is less than \$32,000,000.
- E. A pre-bid meeting is scheduled for this project on **Monday, September 28, 2009, at 1:30 p.m.**, at the El Dorado County Department of Transportation, 2441 Headington Road, Placerville, CA. The meeting will be held in the downstairs conference room. Attendance at the pre-bid meeting is not mandatory.

**OBTAINING OR INSPECTING CONTRACT DOCUMENTS:** The Contract Documents and Plans may be examined at the El Dorado County Department of Transportation or may be purchased in person or by mail from the Department of Transportation, 2850 Fairlane Court, Placerville, California 95667. The purchase price of each set of Contract Documents and Plans (half size plans are included in each set) is **ONE HUNDRED AND THIRTY**

**DOLLARS (\$130.00)** and is not refundable. To receive Contract Documents and Plans by mail, send request and payment prior to shipping and include an additional THIRTY dollars (\$30.00), for a total of **ONE HUNDRED AND SIXTY DOLLARS (\$160.00)**, to include shipping and handling.

The contract cross-sections and an Informational Handout containing the Foundation Investigations, Geotechnical Design and Materials Report, the Bridge Design Hydraulic Study, Finalized Weber Reservoir Operation Plan, Subsurface Investigation, and applicable Revised Standard Plans and New Standard Plans are available to Contract Document holders. The Informational Handout and cross sections will be provided to the Contractor as .pdf files on the DOT's website: <http://www.edcgov.us/DOT/bids.html>. Requests for cross sections in dgn format (six files of approx. size: 10MB each) may be made by sending the signed Electronic Acknowledgement Usage Form, included in Attachment B of this document, to Janel Gifford at [Janel.Gifford@edcgov.us](mailto:Janel.Gifford@edcgov.us) or by fax to (530) 295-2655. Once the signed Electronic Usage Acknowledgement Form is received, the County will forward the files in accordance with the method requested on the Electronic Usage Acknowledgement Form.

**CONTRACTORS LICENSE CLASSIFICATION:** Bidders shall be properly licensed to perform the Work pursuant to the Contractors' State License Law (Business and Professions Code Section 7000 et seq.) and shall possess a **CLASS A** license or equivalent combination of Classes required by the categories and type of Work included in the Contract Documents and Plans at the time the Contract is awarded, and shall maintain a valid license through completion and acceptance of the Work, including the guarantee and acceptance period. Failure of the successful Bidder to obtain proper adequate licensing for an award of the Contract shall constitute a failure to execute the Contract and shall result in the forfeiture of the Bidder's security.

**BUSINESS LICENSE:** The County Business License Ordinance provides that it is unlawful for any person to furnish supplies or services, or transact any kind of business in the unincorporated territory of El Dorado County without possessing a County business license unless exempt under County Ordinance Code Section 5.08.070. The Bidder to whom an award is made shall comply with all of the requirements of the County Business License Ordinance, where applicable, prior to beginning work under this Contract and at all times during the term of this Contract.

**CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD (CIWMB) DECLARATION:** Bidder shall be qualified to complete, and must complete, the California Integrated Waste Management Board Declaration signed under penalty of perjury, stating that within the preceding three (3) years, none of the events listed in Section 17050 of Title 14, California Code of Regulations, Natural Resources, Division 7, has occurred with respect to the bidder. Failure of the successful Bidder to qualify for, and/or sign said Declaration will result in the Bidder being deemed non-responsive.

**REQUIRED LISTING OF PROPOSED SUBCONTRACTORS:** Each Proposal shall have listed therein the name and address of each subcontractor, to whom the bidder proposes to subcontract portions of the work in an amount in excess of 1/2 of one percent of its total bid or \$10,000, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The Bidder shall also include in the Subcontractor Listing the work portion to be performed by each subcontractor listed. The work portion shall be shown by listing the bid item number, description, and percentage of each bid item subcontracted. The percentage of each bid item subcontracted may be submitted with the Bidder's bid or sent via email or fax to Janel Gifford, El Dorado County Department of Transportation, email-Janel.Gifford@edcgov.us, Fax-(530) 295-2655, within 24 hours of the date and time listed for the bid opening in the Notice to Bidders. The email or fax shall contain the name of each subcontractor submitted with the Bidder's bid along with the percentage of each bid item subcontracted. The bidder's attention is invited to other provisions of the Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions

**AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA) FUNDS:** Pursuant to the American Recovery and Reinvestment Act (ARRA) the County of El Dorado is implementing new contract requirements for submittal of Monthly Employment Report forms. Refer to section titled "Monthly Employment Report (American Recovery and Reinvestment Act)," under Section 5, "General," of these Special Provisions.

**BUY AMERICA:** This project is subject to the "Buy America" provisions of the Surface Transportation Assistance Act of 1982, as amended by the Intermodal Surface Transportation Efficiency Act of 1991.

**DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION:** Bidders are advised that, as required by federal law, the County of El Dorado is implementing new Disadvantaged Business Enterprise requirements for Underutilized Disadvantaged Business Enterprises (UDBE). Section 2, "Proposal Requirements and Conditions," under subsection titled "Disadvantaged Business Enterprises (DBE)" and Section 5, "General," under subsection titled "Performance of Subcontractors" of these Special Provisions cover the UDBE requirements.

The Underutilized Disadvantaged Business Enterprise (UDBE) contract goal is **7.3%**.

Bidders are advised that the El Dorado County Department of Transportation will give an overview of the DBE/UDBE requirements associated with this contract at the pre-bid meeting. Bidders are encouraged to attend.

**NONDISCRIMINATION:** Attention is directed to the following Notice that is required by Chapter 5 of Division 4 of Title 2, California Code of Regulations.

**NOTICE OF REQUIREMENT FOR NONDISCRIMINATION PROGRAM  
(GOVERNMENT CODE SECTION 12990)**

Attention is further directed to the "Nondiscrimination Clause," set forth in Section 7-1.01A(4), "Labor Nondiscrimination," of the Standard Specifications, which is applicable to all nonexempt State contracts and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth therein. The specifications are applicable to all nonexempt State construction contracts and subcontracts of \$5,000 or more.

Attention is also directed to the Special Provisions and to the draft Agreement contained in these Contract Documents for additional nondiscrimination and fair employment practices provisions that will apply to this federal-aid contract.

The Department of Transportation hereby notifies all Bidders that it will affirmatively ensure that in any Contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, national origin, religion, age, or disability in consideration for the award.

**PREVAILING WAGE REQUIREMENTS:** In accordance with the provisions of California Labor Code Sections 1770 et seq., including but not limited to Sections 1773, 1773.1, 1773.2, 1773.6, and 1773.7, the general prevailing rate of wages in the county in which the Work is to be done has been determined by the Director of the California Department of Industrial Relations. These wage rates appear in the California Department of Transportation publication entitled General Prevailing Wage Rates.

Interested parties can obtain the current wage information by submitting requests to the California Department of Industrial Relations, Division of Labor Statistics and Research, P.O. Box 420603, San Francisco, CA 94142-0603, Telephone (415) 703-4708, or by referring to the website at <http://www.dir.ca.gov/dlsr/PWD>. The rates at the time of the bid advertisement date of a project will remain in effect for the life of the project in accordance with the California Code of Regulations, as modified and effective January 27, 1997.

Copies of the general prevailing rate of wages in the county in which the Work is to be done are also on file at the Department of Transportation's principal office, and are available upon request, and in case of projects involving federal funds, federal wage requirements as predetermined by the United States Secretary of Labor have been included in the Contract Documents. Addenda to modify the Federal minimum wage rates, if necessary, will be issued as described in the Project Administration section of this Notice to Bidders.

In accordance with the provisions of Labor Code Section 1810, eight (8) hours of labor shall constitute a legal day's work upon all work done hereunder, and Contractor and any subcontractor employed under this Contract shall also conform to and be bound by the provisions of Labor Code Sections 1810 through 1815.

In the case of federally funded projects, where federal and state prevailing wage requirements apply, compliance with both is required. This project is funded in whole or part by federal funds. Contractor's attention is directed to Section 14 of the Special Provisions and the requirements of, and compliance with the Copeland Act (18 U.S.C. 874

and 29 CFR Part 3), the Davis-Bacon Act (40 U.S.C. 276a to 276a-7 and 29 CFR Part 5), and the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330 and 29 CFR Part 5).

If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by Contractor and subcontractors, Contractor and subcontractors shall pay not less than the federal minimum wage rate which most closely approximates the duties of the employees in question.

The U.S. Department of Transportation (USDOT) provides a toll-free "hotline" service to report bid rigging activities. Bid rigging activities can be reported Mondays through Fridays, between 8:00 a.m. and 5:00 p.m., eastern time, at (800) 424-9071. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report these activities. The "hotline" is part of the USDOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

**BID SECURITY:** A bid security shall be provided with each bid. Bid security shall be in an amount of not less than ten percent (10%) of the total amount of the Bid and shall be cash, a certified check or cashier's check drawn to the order of the County of El Dorado or a Bidder's Bond executed by a surety satisfactory to the County of El Dorado **on the form provided in the Proposal section of these Contract Documents (do not detach the form).**

**AWARD OF CONTRACT:** Bids will be considered for award by the Board of Supervisors. The County of El Dorado reserves the right after opening bids to reject any or all bids, to waive any irregularity in a bid, or to make award to the lowest responsive, responsible Bidder and reject all other bids, as it may best serve the interests of the County. As a condition of award, the successful Bidder will be required to submit bonds and evidence of insurance prior to execution of the Agreement by the County. Failure to meet this requirement shall constitute abandonment of the Bid by the Bidder and forfeiture of the Bidder's security. Award will then be made to the next lowest responsible Bidder.

**ESCROW BID DOCUMENTS:** The Bidders' attention is directed to the Special Provision in the Contract Documents entitled "Escrow Bid Documents" for the provisions requiring the successful bidder to submit in a sealed lockable container to the Department of Transportation all documentary information used to prepare its bid.

**RETAINAGE FROM PAYMENTS:** The Contractor may elect to receive one hundred percent (100%) of payments due under the Contract from time to time, without retention of any portion of the payment by the County, by depositing securities of equivalent value with the County in accordance with the provisions of Section 22300 of the Public Contract Code. Securities eligible for deposit hereunder shall be limited to those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.

**PROJECT ADMINISTRATION:** All communications relative to the Contract Documents and Plans shall be directed to Janel Gifford at the El Dorado County Department of Transportation, 2441 Headington Road, Placerville CA 95667, Janel.Gifford@edcgov.us. No oral responses to any questions concerning the content of the Plans and Contract Documents will be given. All responses will be in the form of written addenda to the Contract Documents and Plans or written responses to bidders' inquiries. Responses to bidders' inquiries and addenda will be posted on the Department of Transportation website at [www.edcgov.us/DOT/bids.html](http://www.edcgov.us/DOT/bids.html). It is the bidders' responsibility to check this website for responses to bidders' inquiries and addenda during the bid period.

**BY ORDER OF** the Director of the Department of Transportation, County of El Dorado, State of California.  
Authorized by the Board of Supervisors on September 15, 2009, at Placerville, California.

By \_\_\_\_\_  
James W. Ware, P.E.  
Director of Transportation

US 50/Missouri Flat Road Interchange Improvements Phase 1B  
**Contract No. 71336**  
September 15, 2009

County of El Dorado DOT  
**Notice to Bidders**  
Page N-4

**COUNTY OF EL DORADO, CALIFORNIA**  
**DEPARTMENT OF TRANSPORTATION**

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**SPECIAL PROVISIONS**

**County Contract No. 71336**

**Annexed to Contract No. 03-4E28U4**

**SECTION 1. SPECIFICATIONS AND PLANS**

**1-1.01 GENERAL**

The work embraced herein shall be done in accordance with the Standard Specifications dated July 1999 and the Standard Plans dated July 2004, of the Department of Transportation (Caltrans) insofar as the same may apply and these special provisions.

Amendments to the Standard Specifications set forth in these special provisions shall be considered as part of the Standard Specifications for the purposes set forth in Section 5-1.04, "Coordination and Interpretation of Plans, Standard Specifications and Special Provisions," of the Standard Specifications. Whenever either the term "Standard Specifications is amended" or the term "Standard Specifications are amended" is used in the special provisions, the indented text or table following the term shall be considered an amendment to the Standard Specifications. **In case of conflict between such amendments and the Standard Specifications, the amendments shall take precedence over and be used in lieu of the conflicting portions.**

**In case of conflict between the Standard Specifications, the Amendments to Standard Specification, and these special provisions, the special provisions shall take precedence over and be used in lieu of the conflicting portions.**

Attention is directed to Appendix A of these special provisions containing Amendments to July 1999 Standard Specifications as issued by the State of California Department of Transportation. These Amendments are hereby incorporated into the contract documents to replace or supplement those sections of the Standard Specifications where an Amendment exists, and are to be treated the same as the Standard Specifications in relation to other Contract Documents.

**1-1.02 DEFINITIONS AND TERMS**

Definitions and Terms as used in the contract documents, unless the contract otherwise requires, the following terms have the following meaning:

APPROVAL OF THE CONTRACT – Execution of the Contract by the Board of Supervisors, County of El Dorado.

CALTRANS - The State of California Department of Transportation.

COUNTY - The County of El Dorado, a political subdivision of the State of California

DOT / DEPARTMENT / DEPARTMENT OF TRANSPORTATION - The Department of Transportation as created by the Board of Supervisors for the County of El Dorado.

DEPUTY DIRECTOR - The Deputy Director of Engineering or Deputy Director of Transportation Planning and Systems in the Department of Transportation for the County of El Dorado.

DISTRICT DIRECTOR/DIRECTOR OF TRANSPORTATION - The Director of Transportation in the Department of Transportation for the County of El Dorado.

EID - El Dorado Irrigation District.

ENGINEER / STATE HIGHWAY ENGINEER - The Director of Transportation in the Department of Transportation for the County of El Dorado or his/her authorized representative (Resident Engineer).

FHWA – Federal highway Administration

LABORATORY - The established laboratory of the County of El Dorado Department of Transportation or laboratories authorized by the Engineer to test materials and work involved in the contract.

MUTCD - California Manual on Uniform Traffic Control Devices (FHWA's MUTCD 2003 Revision 1, as amended for use in California), also called the California MUTCD.

OFFICES OF STRUCTURE DESIGN - The Department of Transportation for the County of El Dorado. When the specifications require working drawings to be submitted to the Offices of Structure Design, the drawings shall be submitted to: Adam Bane, El Dorado County Department of Transportation at 4505 Golden Foothill Parkway, El Dorado Hills, CA 95762.

PLANS - The improvement plans titled "In El Dorado County near Placerville on U.S. Route 50 from 0.7 km West to 1.2 km East of the U.S. 50 Missouri Flat Road Overcrossing" approved by El Dorado County Department of Transportation, and the Standard Plans.

STANDARD PLANS - Standard Plans dated July 2004, of the State of California Department of Transportation (Caltrans) and all erratum.

STANDARD SPECIFICATIONS – Standard Specifications dated July 1999 of the State of California, Department of Transportation (Caltrans) and amendments.

STATE - The State of California, including its agencies, departments, or divisions, whose conduct or action is related to the work, or The County of El Dorado, a political subdivision of the STATE, and its Department of Transportation

US DOT – The United States of America Department of Transportation.

## SECTION 2. PROPOSAL REQUIREMENTS AND CONDITIONS

### 2-1.01 GENERAL

The bidder's attention is directed to the provisions in Section 2, "Proposal Requirements and Conditions," of the Standard Specifications and these special provisions for the requirements and conditions which it must observe in the preparation of the Proposal form and the submission of the bid.

The first sentence of the second paragraph in Section 2-1.05, "Proposal Forms," of the Standard Specifications is amended to read:

**“The Proposal form is bound together with the Notice to Bidders, Special Provisions, Agreement and attendant documents.”**

A Proposal shall be deemed “Non-Responsive” if the Proposal is submitted without the entire Contract Document package attached.

In addition to whom the bidder proposes to directly subcontract portions of the Work as required in accordance with Section 2-1.054, “Required Listing of Proposed Subcontractors,” of the Standard Specifications, the list of subcontractors shall also set forth the percentage of each bid item that will be done by each subcontractor listed. A sheet for listing the subcontractors is included in the Proposal section of these Contract Documents

The first sentence of the last paragraph in Section 2-1.07, "Proposal Guaranty," of the Standard Specifications is amended to read: **The bidder's bond shall conform to the bond form included in this Proposal for the project “Missouri Flat Road Overcrossing Phase 1B”, and shall be properly filled out and executed. Do not detach the bidder's bond from the proposal.”**

**(DO NOT DETACH THE FORM).**

**The Proposal shall not be detached and shall be submitted with the Contract Documents bid package in its entirety.**

The form of the bidder's Bond mentioned in the last paragraph in Section 2-1.07, "Proposal Guaranty," of the Standard Specifications will be found in the Proposal.

In accordance with Public Contract Code Section 7106, a Noncollusion Affidavit is included in the Proposal. Signing the Proposal shall also constitute signature of the Noncollusion Affidavit.

The Contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of Title 49 CFR (Code of Federal Regulations) part 26 in the award and administration of US DOT assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as County deems appropriate. Each subcontract signed by the Contractor must include this assurance.

Failure of the bidder to fulfill the requirements of the special provisions for submittals required to be furnished after bid opening, including but not limited to escrowed bid documents, where applicable, may subject the bidder to a determination of the bidder's responsibility in the event it is the apparent low bidder on a future public works contracts.

**2-1.02 INCLUSION OF FEDERAL FORM 1273 CONTRACT PROVISIONS**

In accordance with Section 12.9 of Chapter 12 of the Local Assistance Procedures Manual (LAPM), and Section 14 "FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS" of these Contract Documents the provisions of FHWA Form 1273 are required to be physically incorporated into each contract, subcontract and subsequent lower-tier subcontracts. The provisions may not be incorporated by reference.

The prime Contractor is responsible for compliance with the requirements by all subcontractors and lower tier subcontractors. Failure of the prime contractor to comply with this requirement is grounds for County termination of the contract with the Contractor and debarment of the contractor by FHWA.

**2-1.03 FEDERAL LOBBYING RESTRICTIONS**

Section 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier subrecipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal-aid contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement.

If any funds other than Federal funds have been paid for the same purposes in connection with this Federal-aid contract, the recipient shall submit an executed certification and, if required, submit a completed disclosure form as part of the bid documents.

A certification for Federal-aid contracts regarding payment of funds to lobby Congress or a Federal agency is included in the Proposal. Standard Form - LLL, "Disclosure of Lobbying Activities," with instructions for completion of the Standard Form is also included in the Proposal. Signing the Proposal shall constitute signature of the Certification.

The above-referenced certification and disclosure of lobbying activities shall be included in each subcontract and any lower-tier contracts exceeding \$100,000. All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the Engineer.

The Contractor, subcontractors and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors and any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

- A. A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or
- B. A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or,



- C. A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

#### **2-1.04 DISADVANTAGED BUSINESS ENTERPRISE (DBE)**

This project is subject to Title 49 CFR 26.13(b):

The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

Take necessary and reasonable steps to ensure that DBEs have opportunity to participate in the contract (49 CFR 26).

To ensure there is equal participation of the DBE groups specified in 49 CFR 26.5, the County specifies a goal for Underutilized Disadvantaged Business Enterprises (UDBEs). UDBE is a firm that meets the definition of DBE and is a member of one of the following groups:

1. Black Americans
2. Native Americans
3. Asian-Pacific Americans
4. Women

References to DBEs include UDBEs, but references to UDBEs do not include all DBEs.

Make work available to UDBEs and select work parts consistent with available UDBE subcontractors and suppliers.

Meet the UDBE goal shown in the Notice to Bidders or demonstrate that you made adequate good faith efforts to meet this goal.

It is your responsibility to verify that the UDBE firm is certified as DBE at date of bid opening. For a list of DBEs certified by the California Unified Certification Program, go to:

[http://www.dot.ca.gov/hq/bep/find\\_certified.htm](http://www.dot.ca.gov/hq/bep/find_certified.htm)

Only UDBE participation will count towards the UDBE goal. DBE participation will count towards the County's Annual Anticipated DBE Participation Level (AADPL) and the California statewide goal.

Credit for materials or supplies you purchase from UDBEs counts towards the goal in the following manner:

1. 100 percent counts if the materials or supplies are obtained from a UDBE manufacturer.
2. 60 percent counts if the materials or supplies are obtained from a UDBE regular dealer.
3. Only fees, commissions, and charges for assistance in the procurement and delivery of materials or supplies count if obtained from a UDBE that is neither a manufacturer or regular dealer. 49 CFR 26.55 defines "manufacturer" and "regular dealer."

You receive credit towards the goal if you employ a UDBE trucking company that performs a commercially useful function as defined in 49 CFR 26.55.

UDBE Commitment Submittal

Submit UDBE information on the “Local Agency Bidder-UDBE Commitment (Construction Contracts),” Exhibit 15-G(1), form included in the Proposal. If the form is not submitted with the bid, make a copy of the form from the Proposal before submitting your bid.

If the UDBE Commitment form is not submitted with the bid, the apparent low bidder, the 2nd low bidder, and the 3rd low bidder must complete and submit the UDBE Commitment form via email or fax to Janel Gifford, El Dorado County Department of Transportation, email-[Janel.Gifford@edcgov.us](mailto:Janel.Gifford@edcgov.us), Fax-(530) 295-2655 by 4:00 pm on the 4<sup>th</sup> business day after bid opening.

Other bidders do not need to submit the UDBE Commitment form unless the County requests it. If the County requests you to submit a UDBE Commitment form, submit the completed form within 4 business days of the request via email or fax to Janel Gifford, El Dorado County Department of Transportation, email-[Janel.Gifford@edcgov.us](mailto:Janel.Gifford@edcgov.us), Fax-(530) 295-2655.

Submit written confirmation from each UDBE stating that it is participating in the contract. Include confirmation with the UDBE Commitment form. A copy of a UDBE's quote will serve as written confirmation that the UDBE is participating in the contract.

If you do not submit the UDBE Commitment form with the UDBE quotes within the specified time, the County may find your bid nonresponsive.

#### Good Faith Efforts Submittal

If you have not met the UDBE goal, complete and submit the “UDBE Information - Good Faith Efforts,” Exhibit 15-H, form with the bid showing that you made adequate good faith efforts to meet the goal. Only good faith efforts directed towards obtaining participation by UDBEs will be considered. If good faith efforts documentation is not submitted with the bid, make a copy of Exhibit 15-H before submitting your bid. If good faith efforts documentation is not submitted with the bid, it must be submitted via email or fax to Janel Gifford, El Dorado County Department of Transportation, email-[Janel.Gifford@edcgov.us](mailto:Janel.Gifford@edcgov.us), Fax-(530) 295-2655 by 4:00 pm on the 4<sup>th</sup> business day after bid opening.

If your UDBE Commitment form shows that you have met the UDBE goal or if you are required to submit the UDBE Commitment form, in order to protect your eligibility for award of the contract in the event the County finds that the UDBE goal has not been met, you must also submit good faith efforts documentation within the specified time.

Good faith efforts documentation must include the following information and supporting documents, as necessary:

1. Items of work you have made available to UDBE firms. Identify those items of work you might otherwise perform with your own forces and those items that have been broken down into economically feasible units to facilitate UDBE participation. For each item listed, show the dollar value and percentage of the total contract. It is your responsibility to demonstrate that sufficient work to meet the goal was made available to UDBE firms.
2. Names of certified UDBEs and dates on which they were solicited to bid on the project. Include the items of work offered. Describe the methods used for following up initial solicitations to determine with certainty if the UDBEs were interested, and the dates of the follow-up. Attach supporting documents such as copies of letters, memos, facsimiles sent, telephone logs, telephone billing statements, and other evidence of solicitation. You are reminded to solicit certified UDBEs through all reasonable and available means and provide sufficient time to allow UDBEs to respond.
3. Name of selected firm and its status as a UDBE for each item of work made available. Include name, address, and telephone number of each UDBE that provided a quote and their price quote. If the firm selected for the item is not a UDBE, provide the reasons for the selection.

4. Name and date of each publication in which you requested UDBE participation for the project. Attach copies of the published advertisements.
5. Names of agencies and dates on which they were contacted to provide assistance in contacting, recruiting, and using UDBE firms. If the agencies were contacted in writing, provide copies of supporting documents.
6. List of efforts made to provide interested UDBEs with adequate information about the plans, specifications, and requirements of the contract to assist them in responding to a solicitation. If you have provided information, identify the name of the UDBE assisted, the nature of the information provided, and date of contact. Provide copies of supporting documents, as appropriate.
7. List of efforts made to assist interested UDBEs in obtaining bonding, lines of credit, insurance, necessary equipment, supplies, and materials, excluding supplies and equipment that the UDBE subcontractor purchases or leases from the prime contractor or its affiliate. If such assistance is provided by you, identify the name of the UDBE assisted, nature of the assistance offered, and date. Provide copies of supporting documents, as appropriate.
8. Any additional data to support demonstration of good faith efforts.

In accordance with 49 CFR 26.53(d) if the County determines that the apparent successful bidder failed to meet the Good Faith Effort requirements, the County will provide the apparent successful low bidder an opportunity for administrative reconsideration before awarding the contract. The County will provide the apparent successful low bidder an opportunity to submit written documentation or argument and meet in person with the reconsideration official concerning the issue of whether it met the goal or made adequate good faith efforts to do so. Written documentation and arguments serve to clarify and may not consist of new information. The reconsideration official is someone who did not participate in the original determination that the goal or good faith effort was not met.

#### **2-1.05 REQUIRED LISTING OF PROPOSED SUBCONTRACTORS**

Section 2-1.054, "Required Listing of Proposed Subcontractors," of the Standard Specifications is amended to read:

**2-1.054 Required Listing of Proposed Subcontractors;** Each Proposal shall have listed therein the name, contractor's license number and address of each subcontractor to whom the bidder proposes to subcontract portions of the work in an amount in excess of 0.5 % of the total bid or \$10,000, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The Bidder shall also include in the Subcontractor Listing the work portion to be performed by each subcontractor listed. The work portion shall be shown by listing the bid item number, description, and percentage of each bid item subcontracted. The percentage of each bid item subcontracted may be submitted with the Bidder's bid or sent via email or fax to Janel Gifford, El Dorado County Department of Transportation, email-Janel.Gifford@edcgov.us, Fax-(530) 295-2655 within 24 hours of the date and time listed for the bid opening in the Notice to Bidders. The email or fax shall contain the name of each subcontractor submitted with the Bidder's bid along with the percentage of each bid item subcontracted. At the time the contract is awarded, all listed subcontractors shall be properly licensed to perform their designated portion of the work. The bidder's attention is directed to other provisions of the Act related to the imposition of penalties for failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

Forms for listing the subcontractors who will work on this Project as well as subcontractors who have submitted quotes or bids, but were not selected to work on this Project are included in the Proposal section of these Contract Documents.

#### **2-1.06 COMPLIANCE WITH FEDERAL, STATE AND LOCAL AGENCY REQUIREMENTS**

County is relying rely on federal assistance or grants as well as on state funds for all or a portion of the funding for the Work to be provided under this Contract. As a requirement of County's use of federal and state funds,

County is required to comply with certain federal and state contracting requirements and to extend those requirements to its third party contracts. Contractor shall comply and shall require its subcontractors to comply with all applicable provisions of federal and state regulations, including those required by Caltrans and Federal Highway Administration (FHWA) grant funding requirements, regulations, and related executive orders regarding the use, expenditure, control, reporting, allowable costs and management of such funds as well as these requirements detailed in 49 CFR Part 18, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments. Contractor shall further comply with all applicable provisions of the Caltrans Local Assistance Procedures Manual and the Local Assistance Program Guidelines, all Title 23 Federal requirements and all applicable state and federal laws, regulations and policy; procedural or instructional memoranda. Failure of Contractor to comply with any federal or state provision may be the basis for withholding payments to Contractor and for such other remedies as may be appropriate including termination of this Contract. Contractor shall also comply with any flow-down or third-party contracting provisions which may be required under the federal and state regulations and which may apply to Contractor's subcontracts, if any, associated with this Contract. Contractor shall ensure that all subcontractors submit certifications regarding federal lobbying activities as required by Section 1352, Title 31, United State Code and that all such certifications are made a part of any subcontracts entered into as a result of this Contract.

### **2-1.07 COST PRINCIPLES**

The Federal Acquisition Regulations in Title 48, CFR, Part 31 et seq. as applicable, are the governing factors regarding allowable elements of cost for the Work to be performed under this Contract.

- A. Contractor and its subcontractors shall comply with Office of Management and Budget Circular A-87, Cost Principles for State, Local And Indian Tribal Governments; with Federal administrative procedures pursuant to 49 CFR, Part 18, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments; and with Contract Cost Principles, 48 CFR, Federal Acquisition Regulations System, Chapter 1, Parts 31 et seq., insofar as those regulations may apply to Contractor and its subcontractors. This provision shall apply to every sub-recipient receiving funds as a Contractor or subcontractor under this Contract.
- B. Any expenditures for costs for which Contractor has received payment or credit that are determined by subsequent audit to be unallowable under Office of Management and Budget Circular A-87, 48 CFR, Parts 31 et seq. or 49 CFR, Part 18 are subject to repayment by Contractor to County.
- C. Travel and per diem reimbursements, if applicable, and third-party contract reimbursements to subcontractors will be allowable as project costs only after those costs are incurred and paid for by Contractor.
- D. Notwithstanding any other provision of the Contract Documents to the contrary, payments to Contractor for mileage, travel or subsistence expenses, if applicable, for Contractor's staff or subcontractors claimed for reimbursement shall not exceed the lesser of (1) the rates to be paid to County employees under the current Board of Supervisors Travel Policy in effect at the time the expenses are incurred; or (2) the rates authorized to be paid to rank and file State employees under current State Department of Personnel Administration (DPA) rules. If the rates claimed are in excess of those authorized DPA rates, then Contractor is responsible for the cost difference, and any overpayments inadvertently paid by County shall be reimbursed to County by Contractor on demand within thirty (30) days of such demand.
- E. Contractor and its subcontractors shall establish and maintain accounting systems and records that properly accumulate and segregate funds received under this Agreement by line item. The accounting systems of Contractor and all subcontractors shall conform to Generally Accepted Accounting Principles (GAAP), shall enable the determination of incurred costs at interim points of completion, and shall provide support for reimbursement of payment vouchers or invoices.

### **2-1.08 RELIABLE CONTRACTOR DECLARATION**

This project is funded in part by CIWMB. The County must comply with the Unreliable List requirement associated with this funding. The Unreliable List provision requires the following: Prior to authorizing a contractor(s) to

commence work under the Grant, the County shall submit to the CIWMB a declaration signed under penalty of perjury by the contractor(s) stating that within the preceding three (3) years, none of the events listed in Section 17050 of Title 14, California Code of Regulations, Natural Resources, Division 7, has occurred with respect to the contractor(s). Included herein is a listing of events, or refer to [www.ciwmb.ca.gov/Regulations/Title14/](http://www.ciwmb.ca.gov/Regulations/Title14/). The Reliable Contractor Declaration is included in the Proposal section of these Contract Documents. Bidders shall execute this form and submit it with its Proposal. The successful bidder shall ensure that each of its subcontractors are qualified to and actually execute this declaration. The successful bidder shall submit a Reliable Contractor Declaration(s) signed by its subcontractor(s) with the executed contract documents in accordance with "Execution of Contract" section of these Special Provisions.

The following are grounds for a finding that a contractor, any subcontractor that provides services for a board agreement, grantee or borrower is unreliable and should be placed on the board's Unreliable Contractor, Subcontractor, Grantee or Borrower List ("Unreliable List"). The presence of one of these grounds shall not automatically result in placement on the Unreliable List. A finding must be made by the Executive Director in accordance with section 17054, and there must be a final decision on any appeal that may be filed in accordance with section 17055 et seq.

- (a) Disallowance of any and/or all claim(s) to the board due to fraudulent claims or reporting; or
- (b) The filing of a civil action by the Attorney General for a violation of the False Claims Act, Government Code section 12650 et seq; or
- (c) Default on a board loan, as evidenced by written notice from board staff provided to the borrower of the default; or
- (d) Foreclosure upon real property loan collateral or repossession of personal property loan collateral by the board; or
- (e) Filing voluntary or involuntary bankruptcy, where there is a finding based on substantial evidence, that the bankruptcy interfered with the board contract, subcontract, grant or loan; or
- (f) Breach of the terms and conditions of a previous board contract, any subcontract for a board agreement, grant, or loan, resulting in termination of the board contract, subcontract, grant or loan by the board or prime contractor; or
- (g) Placement on the board's chronic violator inventory established pursuant to Public Resources Code section 44104 for any owner or operator of a solid waste facility; or
- (h) The person, or any partner, member, officer, director, responsible managing officer, or responsible managing employee of an entity has been convicted by a court of competent jurisdiction of any charge of fraud, bribery, collusion, conspiracy, or any act in violation of any state or federal antitrust law in connection with the bidding upon, award of, or performance under any board contract, subcontract, grant or loan; or
- (i) The person or entity is on the list of unreliable persons or entities, or similar list, of any other federal or California state agency; or
- (j) The person or entity has violated an Order issued in accordance with section 18304; or,
- (k) The person or entity has directed or transported to, has or accepted waste tires at, a site where the operator is required to have but does not have a waste tire facility permit; or,
- (l) The person or entity has transported waste tires without a waste tire hauler registration; or,
- (m) The person or entity has had a solid waste facility or waste tire permit or a waste tire hauler registration denied, suspended or revoked; or,
- (n) The person or entity has abandoned a site or taken a similar action which resulted in corrective action or the expenditure of funds by the Board to remediate, clean, or abate a nuisance at the site; or
- (o) The following are additional grounds for a finding that, a person or entity described below should be placed on the Unreliable List:

- (1) The person or entity owned 20% or more of an entity on the Unreliable List at the time of the activity that resulted in its placement on the Unreliable List;
- (2) The person held the position of officer director, manager, partner, trustee, or any other management position with significant control (Principal Manager) in an entity on the Unreliable List at the time of the activity that resulted in its placement on the Unreliable List;
- (3) The entity includes a Principal Manager who:
  - 1. Was a Principal Manager in an entity on the Unreliable List at the time of the activity that resulted in its placement on the Unreliable List; or,
  - 2. Owned 20% or more of an entity on the Unreliable List at the time of the activity that resulted in its placement on the Unreliable List;
- (4) The entity has a person who owns 20% or more of the entity, if that person:

1. Was a Principal Manager in an entity on the Unreliable List at the time of the activity that resulted in its placement on the Unreliable List; or,
  2. Owned 20% or more of an entity on the Unreliable List at the time of the activity that resulted in its placement on the Unreliable List.
- (5) The entity has another entity which owns 20% or more of the entity, if that other entity:
1. Is on the Unreliable List; or,
  2. Owned 20% or more of an entity on the Unreliable List at the time of the activity that resulted in its placement on the Unreliable List.
- (6) Subsection (o) is not intended to apply to a person or entity that purchases or otherwise obtains an entity on the Unreliable List subsequent to its placement on the Unreliable List.

### **SECTION 3. AWARD AND EXECUTION OF CONTRACT**

#### **3-1.01 GENERAL**

Attention is directed to the provisions in Section 3, "Award and Execution of Contract," of the Standard Specifications and these special provisions for the requirements and conditions concerning award, and execution of contract.

#### **3-1.02 AWARD OF CONTRACT**

Section 3-1.01, "Award of Contract," of the Standard Specifications is amended to read:

**3-1.01 Award of Contract;** The right is reserved to reject any and all Proposals. The award of the Contract, if it be awarded, will be to the lowest responsive responsible bidder whose Proposal complies with all the requirements prescribed. Such award, if made, will be made within sixty (60) days after the opening of the Proposals. This period will be subject to extension for such further period as may be agreed upon in writing between the Department and the bidder concerned.

All bids will be compared on the basis of the Proposal Pay Items and Bid Price Schedule of the quantities of work to be done.

The lowest responsive responsible bidder shall be the bidder submitting the lowest additive total of all the bid items. In the event of a discrepancy between the unit price bid and the extended unit total as stated on the Proposal, the amount bid for the unit price shall control and shall be utilized in calculating the additive total of the bid items for purposes of award, including revisions by Addenda, and as specified in the Proposal instructions.

A "LOCAL AGENCY BIDDER - DBE INFORMATION (Construction Contracts) Exhibit 15 -G(2)" form will be included in the contract documents to be executed by the successful bidder. The purpose of the form is to collect data required under 49 CFR 26. Even if no DBE participation will be reported, the successful bidder must execute and return the form. Information required on this form is in addition to the .Local Agency Bidder – UDDBE Commitment (Construction Contracts) Exhibit 15-G (1) form included in the Proposal section. The successful bidder's "LOCAL AGENCY BIDDER - DBE INFORMATION" (Construction Contracts) Exhibit 15 -G(2)" form should include the names, addresses and phone numbers of DBE firms that will participate, with a complete description of work or supplies to be provided by each, and the dollar value of each DBE transaction. When 100 percent of a contract item of work is not to be performed or furnished by a DBE, a description of the exact portion of that work to be performed or furnished by that DBE should be included in the DBE information, including the planned location of that work. A successful bidder certified as a DBE shall describe the work it has committed to performing with its own forces as well as any other work that it has committed to be performed by DBE subcontractors, suppliers and trucking companies.

The successful bidder is encouraged to provide written confirmation from each DBE that the DBE is participating in the contract. A copy of a DBE's quote will serve as written confirmation that the DBE is

participating in the contract. If a DBE is participating as a joint venture partner, the successful bidder is encouraged to submit a copy of the joint venture agreement.

The "LOCAL AGENCY BIDDER - DBE INFORMATION (Construction Contracts) Exhibit 15 –G(2)" form shall be completed and returned to the County by the successful bidder with the executed contract, contract bonds and other required contract documents.

### **3-1.03 EXECUTION OF CONTRACT**

Attention is directed to the "Notice to Bidders" and "Proposal" for this Contract. Barring some unforeseen irregularity, Notice of Award will be sent to the lowest responsive responsible bidder after approval by the El Dorado County Board of Supervisors.

The successful bidder shall return the signed Contract, the Contract bonds, the completed "LOCAL AGENCY – DBE INFORMATION (Construction Contracts) Exhibit 15 – G(2)" form, Reliable Contractor Declarations(s) executed by successful bidder's subcontract(s), the escrow bid documents with lockable container, a California Form 590-Withholding Exemption Certificate, a Federal Form W-9-Request for Taxpayer Identification Number and Certification, and certificates of insurance to the Office of the Department of Transportation within ten (10) days, not including Sundays and legal holidays, of the date of the Notice of Award of Contract letter. Priority delivery or mail of these documents should be to attention Janel Gifford at the El Dorado County Department of Transportation, 2441 Headington road, Placerville CA 95667, Janel.Gifford@edcgov.us.

The failure of the successful bidder to furnish any bond required of it by law or by this Agreement, or the failure to execute the Contract, or the failure to provide the required insurance documents within the time fixed for the execution of the Contract and return of the bonds and insurance constitutes a failure to execute and return the Contract as required herein. Upon such failure or refusal to return the executed Agreement, or to provide the bonds or insurance documents required herein, the bidder's security shall be forfeited to the County.

### **3-1.04 ESCROW BID DOCUMENTS**

#### **Scope**

The successful bidder shall submit to Janel Gifford at the El Dorado County Department of Transportation, 2441 Headington road, Placerville CA 95667, Janel.Gifford@edcgov.us, within ten (10) days, not including Sundays and legal holidays, of the date of the Notice of Award of the Contract letter, one sealed copy of all documentary information generated in preparation of bid prices for this project. This material is hereinafter referred to as Escrow Bid Documents (EBDs). The EBDs of the successful bidder will be held in escrow for the duration of the contract.

The successful bidder agrees, as a condition of execution of the Contract, that the EBDs constitute the only complete documentary information used in preparation of his bid. No other bid preparation information shall be considered in resolving disputes.

Nothing in the EBDs shall change or modify the terms or conditions of the Contract.

#### **Ownership**

The EBDs are and shall always remain the property of the Contractor subject only to joint review by County and the Contractor, except as provided for herein.

County, for purposes of this section, will treat EBDs, as defined herein, as trade secrets. This acknowledgment is based on the County's express understanding that the information contained in the EBDs is not known outside the Contractor's business, is known only to a limited extent and only by a limited number of employees of the Contractor, is safeguarded while in the Contractor's possession, and is extremely valuable to competitors by virtue of it reflecting the Contractor's contemplated techniques of construction.

County acknowledges that EBDs and the information contained therein are made available to County only because such action is an express prerequisite to execution of the Contract by the County. County acknowledges that the EBDs include a compilation of information used in the Contractor's business, intended to give the Contractor an opportunity to obtain an advantage over competitors who do not know of or use the contents of the documentation. County agrees to safeguard the EBDs and all information contained therein to the fullest extent permitted by law.

**Purpose**

EBDs will be used to assist in the negotiation of price adjustments and variations and in the settlement of disputes, claims and other controversies. They will not be used for evaluation of the Contractor’s anticipated methods of construction or to assess the Contractor’s qualifications for performing the Work.

**Format and Contents**

Bidders may submit EBDs in their usual cost estimating format. It is not intended that extra work is required in preparing the bid but to ensure that the EBDs will be adequate to enable complete and proper understanding and proper interpretation for their intended use. The EBDs shall be in the English language only.

The EBDs shall clearly itemize the estimated costs of performing the work of each item contained in the Proposal Pay Items and Bid Schedule. Items should be separated into sub-items as required to present a complete and detailed cost estimate and allow a detailed cost review. The EBDs shall include all quantity take-offs, crews, assumed overtime, equipment, calculations of rates of production and progress, acceleration costs, copies of quotations from Subcontractors and suppliers, and memoranda, narratives, consultants reports, add/deduct sheets, and all other information used by the Contractor to arrive at the prices contained in the bid. Estimated costs shall be broken down into the Contractor’s usual estimate categories such as direct labor, repair labor, equipment operation, equipment ownership, expendable materials, permanent materials, and subcontract costs as appropriate. Plant and equipment and indirect costs should be detailed in the Contractor’s usual format. The Contractor’s allocation of plant and equipment, indirect costs, contingencies, mark-up, and other items to each bid item shall be clearly indicated.

The EBDs shall clearly show in calculations, text, or both, the relationship between baseline indications presented in the Contract Documents and assumptions that form the basis for the Contractor’s means, methods, equipment selection, rates of production, and costs.

All costs shall be identified. For bid items where the extended amount is less than \$10,000 estimated unit costs are acceptable without a detailed cost estimate, providing that labor, equipment, materials and subcontracts, as applicable, are included and provided that indirect costs, contingencies, and mark-up, as applicable, are allocated.

Bid Documents provided by County should not be included in the EBDs unless needed to comply with the above requirements.

**Submittal**

The EBDs shall be submitted by the successful bidder in a sealed lockable container within ten (10) days, not including Sundays and legal holidays, of the date of the Notice of Award of the Contract letter. The container shall be clearly marked on the outside with the Bidder’s name, date of submittal, project name, Contract No., and the words “Escrow Bid Documents”.

The EBDs shall be accompanied by the “Bid Documentation Certification”, signed by an individual authorized by the bidder to execute the bid, stating that the material in the Escrow Bid Documentation constitutes all the documentary information used in the preparation of the bid and that he or she has personally examined the contents of the EBDs container and has found that the documents in the container are complete.

“Escrow Bid Document Certification”

*THE UNDERSIGNED HEREBY CERTIFIES THAT THE BID DOCUMENTATION CONTAINED HEREIN CONSTITUTES ALL THE INFORMATION USED IN PREPARATION OF THE BID AND THAT I HAVE PERSONALLY EXAMINED THESE CONTENTS AND HAVE FOUND THAT THIS BID DOCUMENTATION IS COMPLETE.*

**SIGNATURE:**

**NAME:**  
*(Print)*

**TITLE:**

**FIRM:**

**DATE:**



Prior to execution of the Contract by the County, the EBDs of the successful bidder will be examined, organized and inventoried by representatives of County, together with members of the Contractor's staff who are knowledgeable in how the bid was prepared. This examination is to ensure that the EBDs are authentic, legible, and complete. It will not include review of and will not constitute approval of proposed construction methods, estimating assumptions, or interpretations of the Contract Documents. Examination will not alter any condition(s) or term(s) of the Contract.

If all documentation required in the "Format and Contents" has not been included in the original submittal, additional documentation shall be submitted, at County's discretion, prior to execution of the Contract by the County. The detailed breakdown of estimated costs shall be reconciled and revised, if appropriate, by agreement between the Contractor and County before execution of the Contract by the County.

Failure of the successful bidder to furnish the EBDs in accordance with this special provision constitutes a failure to execute and return the Contract as required. Upon such failure to submit the EBDs as required herein, the bidder's security will be forfeited to the County. The County will then recommend that the Board of Supervisors award the Contract to the second lowest bidder, who shall comply with the EBDs provisions herein.

If the bidder's proposal is based on subcontracting any part of the Work, each Subcontractor whose total subcontract price exceeds five percent of the total contract price proposed by the bidder, shall provide separate EBDs to be included with those of the bidder. These documents will be opened and examined in the same manner and at the same time as the examination described above for the apparent successful bidder.

If the Contractor wishes to subcontract any portion of the Work after award, County retains the right to require the Contractor to submit EBDs from the Subcontractor for subcontracts that exceed 5% of the total contract amount before the subcontract is approved.

#### **Storage**

The EBDs shall be stored at the Department of Transportation's Construction Unit at 2441 Headington Road, Placerville, CA. in the lockable container supplied by the Contractor. The Contractor shall provide the lockable container and the Contractor shall maintain possession of the key.

#### **Examination**

The EBDs shall be examined by both County and the Contractor, at any time deemed necessary by either County or the Contractor, to assist in the negotiation of price adjustments and change orders, or the settlement of disputes.

Examination of the EBDs is subject to the following conditions:

- a. As trade secrets, the EBDs are proprietary and confidential as described above.
- b. County and the Contractor shall each designate, in writing to the other party a minimum of ten calendar days prior to examination, representatives who are authorized to examine the EBDs. No other person shall have access to the EBDs.
- c. Access to the EBDs will take place only in the presence of duly designated representatives of both County and the Contractor.

#### **Final Disposition**

The EBDs and the lockable container will be returned to the Contractor at such time as the Contract has been completed and final settlement has been achieved.

Full compensation for preparing and submitting EBDs, furnishing the lockable container, for preparing and submitting EBDs for any subcontractor after award, and for examining EBDs shall be considered as included in the contract price for various items of work involved and no additional compensation will be allowed therefor.

## **SECTION 4. BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES**

### **4-1.01 GENERAL**

Attention is directed to the provisions in Section 8-1.06, "Time of Completion," and in Section 8-1.07, "Liquidated Damages," of the Standard Specifications and these special provisions.

Section 8-1.03, "Beginning of Work" of the Standard Specifications shall not apply and shall be replaced with the following:

The Contractor shall begin work on the date stated in the Notice to Proceed issued by the Department of Transportation.

The work shall be diligently prosecuted to completion before the expiration of **450 WORKING DAYS**.

The Contractor shall pay to the County of El Dorado the sum of **\$9,300** per day, for each and every calendar day's delay in finishing the work in excess of **450 WORKING DAYS**.

The 72-hour advance notice before beginning work specified in Section 8-1.03, "Beginning of Work," of the Standard Specifications is changed to 5 days advance notice for this project.

### **4-1.02 CONTRACT WORKING HOURS**

Attention is directed to "Sound Control Requirements" and "Maintaining Traffic" of these special provisions.

### **4-1.03 PRE-CONSTRUCTION CONFERENCE AND WEEKLY MEETINGS**

A pre-construction conference will be scheduled by the Engineer between the Engineer and the Contractor or its representative after the project is awarded and prior to the issuance of the Notice to Proceed. The conference will be held at the Construction Office, 2441 Headington Road, Placerville to discuss the work each DBE subcontractor will perform and important aspects of the project and all essential matters pertaining to the prosecution and the satisfactory completion of the project as required, and the Contractor shall bring all required schedules and documents to the meeting.

Before work can begin on a subcontract, the Department will require the Contractor to submit a completed "Subcontracting Request", Exhibit 16-B of the Caltrans Local Assistance Procedures Manual (LAPM) or equivalent. When the Engineer receives the completed form it will be checked for agreement of the first tier subcontractors and DBE's. The Engineer will not approve the request when it identifies someone other than the DBE or first tier subcontractor listed in the previously completed "LOCAL AGENCY BIDDER – DBE INFORMATION (Construction Contracts) Exhibit 15-G (2) " form. The "Subcontracting Request" will not be approved until any discrepancies are resolved. If an issue cannot be resolved at that time, or there is some other concern, the Engineer will require the Contractor to eliminate the subcontractor in question before signing the subcontracting request. A change in the DBE or first tier subcontractor may be addressed during a substitution process at a later date.

Suppliers, vendors, or manufacturers listed on the "LOCAL AGENCY BIDDER – DBE INFORMATION (Construction Contracts) Exhibit 15-G (2)" form will be compared to those listed in the completed Exhibit 16-I "Notice of Materials to be Used", of the LAPM or equivalent. Differences must be resolved by either making corrections or requesting a substitution.

Substitutions will be subject to the Subletting and Subcontracting Fair Practices Act (FPA). The Department will require contractors to adhere to the provisions within Subletting and Subcontracting Fair Practices Act (State Law) Sections 4100-4114. FPA requires the Contractor to list all subcontractors in excess of one half of one percent (0.5%) of the Contractor's total bid or \$10,000, whichever is greater. The statute is designed to prevent bid shopping by contractors. The FPA explains that a contractor may not substitute a subcontractor listed in the original bid except with the approval if the awarding authority.

The Engineer will give the Contractor a blank Exhibit 17-F, "Final Report – Utilization of Disadvantaged Business Enterprises (DBE), First –Tier Subcontractors," from the Caltrans LAPM. This form must be completed and returned to the County with the Acceptance Statement, which accompanies the Proposed Final Pay Estimate.

#### **4-1.04 PROSECUTION AND PROGRESS**

Attention is directed to the provisions of Section 8 of the Standard Specifications.

The Contractor shall notify the Engineer within five (5) working days of any occurrence, which in the Contractor's opinion, entitles it to an extension of time for completion. Such notice shall be in writing. The Engineer shall acknowledge, in writing, receipt of any such claim by the Contractor within five (5) working days of its receipt.

### **SECTION 5. GENERAL**

#### **SECTION 5-1. MISCELLANEOUS**

##### **5-1.01 CONTRACT BONDS**

Attention is directed to Section 3-1.02, "Contract Bonds," of the Standard Specifications and these special provisions.

The performance bond shall be in a sum not less than one hundred percent of the total amount payable by the terms of the contract.

The payment bond shall be in a sum not less than one hundred percent of the total amount payable by the terms of the contract.

##### **5-1.02 GUARANTEE**

###### **GENERAL**

The Contractor shall guarantee the work is in accordance with contract requirements and remains free from substantial defects in materials and workmanship for a period of one year after contract acceptance. For certain portions of the work where the Director relieves the Contractor of responsibility in accordance with Section 7-1.15, "Relief from Maintenance and Responsibility," of the Standard Specifications, the guarantee period starts on the relief date and ends one year thereafter.

Substantial defects in materials and workmanship means defective work objectively manifested by damaged, displaced, or missing parts or components and workmanship resulting in improper function of materials, components, equipment, or systems, as installed or manufactured by the Contractor, subcontractor, supplier, or manufacturer.

During the guarantee period, the Contractor shall repair or replace contract work and associated work which is not in accordance with contract requirements or has substantial defects in materials and workmanship. The Contractor shall perform the corrective work with no expense to the Department other than State-provided field inspection services.

The guarantee of work excludes damage or displacement that is outside the control of the Contractor and caused by normal wear and tear, improper operation, insufficient maintenance, abuse, unauthorized modification, or natural disaster as described in Section 7-1.165, "Damage by Storm, Flood, Tsunami or Earthquake," of the Standard Specifications.

The Contractor shall have the same insurance coverage during corrective work operations as prior to contract acceptance, in accordance Section 7, "Contractor's Insurance" of these special provisions.

The contract bonds furnished in accordance with Section 3-1.02, "Contract Bonds," of the Standard Specifications must remain in full force and effect during the guarantee period and until all corrective work is complete.

In the case of conflict between this guarantee provision and any warranty provision included in the contract, the warranty provision shall govern for the specific construction product or feature covered.

###### **CORRECTIVE WORK**

During the guarantee period, the Department will monitor performance of the highway facilities completed by the Contractor and will perform a thorough review of the contract work at least 60 days before the expiration of the one-year guarantee.

If the Engineer discovers contract work not in compliance with contract requirements or that has substantial defects in materials and workmanship, at any time during the guarantee period, a list of items that require corrective work will be developed and forwarded to the Contractor. Within 15 days of receipt of a list, the Contractor shall

submit to the Engineer a detailed plan for performing corrective work. The work plan shall include a start to finish schedule. It shall include a list of labor, equipment, materials, and any special services intended to be used. It shall clearly show related work including traffic control, temporary delineation, and permanent delineation.

The Contractor shall start the corrective and related work within 15 days of receiving notice from the Engineer that the Contractor's work plan is approved. The corrective work shall be diligently prosecuted and completed within the time allotted in the approved work plan.

If the Engineer determines that corrective work, covered by the guarantee, is urgently needed to prevent injury or property damage, the Engineer will give the Contractor a request to start emergency repair work and a list of items that require repair work. The Contractor shall mobilize within 24 hours and diligently perform emergency repair work on the damaged highway facilities. The Contractor shall submit a work plan within 5 days of starting emergency repair work.

If the Contractor fails to commence and execute, with due diligence, corrective work and related work required under the guarantee in the time allotted, the Engineer may proceed to have the work performed by State forces or other forces at the Contractor's expense. Upon demand, the Contractor shall pay all costs incurred by the Department for work performed by State forces or other forces including labor, equipment, material, and special services.

### **PAYMENT**

Full compensation for performing corrective work; and related work such as traffic control, temporary delineation, and permanent delineation, and to maintain insurance coverage and bonds, shall be considered as included in the contract prices paid for the various contract items of work and no separate payment will be made therefor.

### **5-1.03 COST REDUCTION INCENTIVE**

Attention is directed to Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications.

Prior to preparing a written cost reduction proposal, the Contractor shall request a meeting with the Engineer to discuss the proposal in concept. Items of discussion will also include permit issues, impact on other projects, impact on the project schedule, peer reviews, overall merit of the proposal, and review times required by the Department and other agencies.

If a cost reduction proposal submitted by the Contractor, and subsequently approved by the Engineer, provides for a reduction in contract time, 50 percent of that contract time reduction shall be credited to the State by reducing the contract working days, not including plant establishment. Attention is directed to "Beginning of Work, Time of Completion and Liquidated Damages" of these special provisions regarding the working days.

If a cost reduction proposal submitted by the Contractor, and subsequently approved by the Engineer, provides for a reduction in traffic congestion or avoids traffic congestion during construction, 60 percent of the estimated net savings in construction costs attributable to the cost reduction proposal will be paid to the Contractor. In addition to the requirements in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications, the Contractor shall provide detailed comparisons of the traffic handling between the existing contract and the proposed change, and estimates of the traffic volumes and congestion.

### **5-1.04 LABOR NONDISCRIMINATION**

Attention is directed to the following Notice that is required by Chapter 5 of Division 4 of Title 2, California Code of Regulations.

### **NOTICE OF REQUIREMENT FOR NONDISCRIMINATION PROGRAM**

#### **(GOV. CODE, SECTION 12990)**

Your attention is called to the "Nondiscrimination Clause", set forth in Section 7-1.01A(4), "Labor Nondiscrimination," of the Standard Specifications, which is applicable to all nonexempt State contracts and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth therein. The specifications are applicable to all nonexempt State construction contracts and subcontracts of \$5,000 or more.

Attention is also directed to the draft Agreement contained in these Contract Documents for additional nondiscrimination and fair employment practice provisions that will apply to this federal-aid Contract.

### **5-1.05 UNSATISFACTORY PROGRESS**

If the number of working days charged to the contract exceeds 75 percent of the working days in the current time of completion and the percent working days elapsed exceeds the percent work completed by more than 15 percentage points, the Department will withhold 10 percent of the amount due on the current monthly estimate.

The percent working days elapsed will be determined from the number of working days charged to the contract divided by the number of contract working days in the current time of completion, expressed as a percentage. The number of contract working days in the current time of completion shall consist of the original contract working days increased or decreased by time adjustments approved by the Engineer.

The percent work completed will be determined by the Engineer from the sum of payments made to date plus the amount due on the current monthly estimate, divided by the current total estimated value of the work, expressed as a percentage.

When the percent of working days elapsed minus the percent of work completed is less than or equal to 15 percentage points, the funds withheld shall be returned to the Contractor with the next monthly progress payment.

Funds kept or withheld from payment, due to the failure of the Contractor to comply with the provisions of the contract shall not be considered to be a payment due the contractor for purposes of Public Contract Code Section 20104.5 until such time as the Contractor complies with the provisions of the contract and this section in particular.

### **5-1.06 PAYMENT OF WITHHELD FUNDS**

Payment of withheld funds shall conform to Section 9-1.065, "Payment of Withheld Funds," of the Standard Specifications and these special provisions.

The Department will retain 10% of the value of each progress payment (excluding mobilization payments) from each progress payment. . In conformance with 49 CFR 26.29 the Department will release retention incrementally as follows:

1. When 25% of the total amount bid (excluding mobilization) has been completed, the Department will release all retention withheld up to this point;
2. When 50% of the total amount bid (excluding mobilization) has been completed, the Department will release all retention withheld since the previous release;
3. When 75% of the total amount bid (excluding mobilization) has been completed, the Department will release all retention withheld since the previous release.
4. The remaining retained funds shall be retained until thirty five (35) days after recordation of the Notice of Acceptance.

Work increments deemed complete by the Engineer under this section do not affect the Contractor's other contractual obligations pertaining to that work, including, but not limited to, the commencement of the warranty period or the Contractor's obligation of maintenance and responsibility for that increment of work. Relief from maintenance and responsibility shall be at the discretion of the Engineer and shall conform to the provisions of Section 7-1.15 "Relief from Maintenance and Responsibility" of the Standard Specifications.

The Contractor may elect to receive one hundred percent (100%) of payments due under the Contract from time to time, without retention of any portion of the payment by the County, by depositing securities of equivalent value with the County in accordance with the provisions of Section 22300 of the California Public Contract Code. Securities eligible for deposit hereunder shall be limited to those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.

Funds withheld from progress payments to ensure performance of the contract that are eligible for payment into escrow or to an escrow agent pursuant to Section 22300 of the Public Contract Code do not include funds withheld or deducted from payment due to failure of the Contractor to fulfill a contract requirement.

### **5-1.07 INTEREST ON PAYMENTS**

Interest shall be payable on progress payments, payments after acceptance, final payments, extra work payments, and claim payments as follows:

- A. Unpaid progress payments, payment after acceptance, and final payments shall begin to accrue interest 30 days after the receipt of an undisputed and properly submitted pay request from the Contractor defined

herein as the pay estimate prepared by the Engineer and approved by the Contract Administrator for the County..

- B. Unpaid extra work bills shall begin to accrue interest 30 days after preparation of the first pay estimate following receipt of a properly submitted and undisputed extra work bill. To be properly submitted, the bill must be submitted within 7 days of the performance of the extra work and in conformance with the provisions in Section 9-1.03C, "Records," and Section 9-1.06, "Partial Payments," of the Standard Specifications. An undisputed extra work bill not submitted within 7 days of performance of the extra work will begin to accrue interest 30 days after the preparation of the second pay estimate following submittal of the bill.
- C. The rate of interest payable for unpaid progress payments, payments after acceptance, final payments, and extra work payments shall be 10 percent per annum.
- D. The rate of interest payable on unpaid and undisputed claims shall be 6 percent per annum. Interest shall begin to accrue 61 days after the Contractor submits to the Engineer information in sufficient detail to enable the Engineer to accept the claim statement.

The rate of interest payable on any award in arbitration shall not exceed 6 percent per annum in accordance with Public Contract Code Section 10240.13.

### **5-1.08 PUBLIC SAFETY**

The Contractor shall provide for the safety of traffic and the public in conformance with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications and these special provisions.

The Contractor shall install temporary railing (Type K) between a lane open to public traffic and an excavation, obstacle or storage area when the following conditions exist:

- A. Excavations—The near edge of the excavation is 3.6 m or less from the edge of the lane, except:
  - 1. Excavations covered with sheet steel or concrete covers of adequate thickness to prevent accidental entry by traffic or the public.
  - 2. Excavations less than 0.3-m deep.
  - 3. Trenches less than 0.3-m wide for irrigation pipe or electrical conduit, or excavations less than 0.3-m in diameter.
  - 4. Excavations parallel to the lane for the purpose of pavement widening or reconstruction.
  - 5. Excavations in side slopes, where the slope is steeper than 1:4 (vertical: horizontal).
  - 6. Excavations protected by existing barrier or railing.
- B. Temporarily Unprotected Permanent Obstacles—The work includes the installation of a fixed obstacle together with a protective system, such as a sign structure together with protective railing, and the Contractor elects to install the obstacle prior to installing the protective system; or the Contractor, for the Contractor's convenience and with permission of the Engineer, removes a portion of an existing protective railing at an obstacle and does not replace such railing complete in place during the same day.
- C. Storage Areas—Material or equipment is stored within 3.6 m of the lane and the storage is not otherwise prohibited by the provisions of the Standard Specifications and these special provisions.

The approach end of temporary railing (Type K), installed in conformance with the provisions in this section "Public Safety" and in Section 7-1.09, "Public Safety," of the Standard Specifications, shall be offset a minimum of 4.6 m from the edge of the traffic lane open to public traffic. The temporary railing shall be installed on a skew toward the edge of the traffic lane of not more than 0.3-m transversely to 3 m longitudinally with respect to the edge of the traffic lane. If the 4.6-m minimum offset cannot be achieved, the temporary railing shall be installed on the 10 to 1 skew to obtain the maximum available offset between the approach end of the railing and the edge of the traffic lane, and an array of temporary crash cushion modules shall be installed at the approach end of the temporary railing.

Except for installing, maintaining and removing traffic control devices, whenever work is performed or equipment is operated in the following work areas, the Contractor shall close the adjacent traffic lane unless otherwise provided in the Standard Specifications and these special provisions:

Approach Speed of Public Traffic (Posted Limit) (Kilometers Per Hour)	Work Areas
Over 72 (45 Miles Per Hour)	Within 1.8 m of a traffic lane but not on a traffic lane
56 to 72 (35 to 45 Miles Per Hour)	Within 0.9-m of a traffic lane but not on a traffic lane

The lane closure provisions of this section shall not apply if the work area is protected by permanent or temporary railing or barrier.

When traffic cones or delineators are used to delineate a temporary edge of a traffic lane, the line of cones or delineators shall be considered to be the edge of the traffic lane, however, the Contractor shall not reduce the width of an existing lane to less than 3 m without written approval from the Engineer.

When work is not in progress on a trench or other excavation that required closure of an adjacent lane, the traffic cones or portable delineators used for the lane closure shall be placed off of and adjacent to the edge of the traveled way. The spacing of the cones or delineators shall be not more than the spacing used for the lane closure.

Suspended loads or equipment shall not be moved nor positioned over public traffic or pedestrians.

Full compensation for conforming to the provisions in this section "Public Safety," including furnishing and installing temporary railing (Type K) and temporary crash cushion modules, shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

### 5-1.09 TESTING

Testing of materials and work shall conform to the provisions in Section 6-3, "Testing," of the Standard Specifications and these special provisions.

Whenever the provisions of Section 6-3.01, "General," of the Standard Specifications refer to tests or testing, it shall mean tests to assure the quality and to determine the acceptability of the materials and work.

The Engineer will deduct the costs for testing of materials and work found to be unacceptable, as determined by the tests performed by the Department, and the costs for testing of material sources identified by the Contractor which are not used for the work, from moneys due or to become due to the Contractor. The amount deducted will be determined by the Engineer.

### 5-1.10 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES

Attention is directed to "Air Pollution Control" and "Dust Control" of these special provisions.

When the presence of asbestos or hazardous substances are not shown on the plans or indicated in the specifications and the Contractor encounters materials which the Contractor reasonably believes to be asbestos as defined in Section 25914.1 of the Health and Safety Code or a hazardous substance as defined in Section 25117 of the Health and Safety Code, and the asbestos or hazardous substance has not been rendered harmless, the Contractor may continue work in unaffected areas reasonably believed to be safe. The Contractor shall immediately cease work in the affected area and report the condition to the Engineer in writing.

In conformance with Section 25914.1 of the Health and Safety Code, removal of asbestos or hazardous substances including exploratory work to identify and determine the extent of the asbestos or hazardous substance will be performed by separate contract.

If delay of work in the area delays the current controlling operation, the delay will be considered a right of way delay and the Contractor will be compensated for the delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

### 5-1.11 SOLID WASTE DISPOSAL AND RECYCLING REPORT

This work shall consist of reporting disposal and recycling of construction solid waste, as specified in these special provisions. For the purposes of this section, solid waste includes construction and demolition waste debris, but not hazardous waste.

Annually by the fifteenth day of January, the Contractor shall complete and certify Form CEM-4401, "Solid Waste Disposal and Recycling Report," which quantifies solid waste generated by the work performed and disposed of in landfills or recycled during the previous calendar year. The amount and type of solid waste disposed of or recycled shall be reported in tons. The Contractor shall also complete, certify, and submit Form CEM-4401 with the Acceptance Statement, which accompanies the Proposed Final Pay Estimate..

Form CEM-4401, "Solid Waste Disposal and Recycling Report" can be downloaded at:

<http://www.dot.ca.gov/hq/construc/manual2001>

If the Contractor has not submitted Form CEM-4401, by the dates specified above, the Department will withhold the amount of \$10,000 for each missing or incomplete report. The moneys withheld will be released for payment on the next monthly estimate for partial payment following the date that a complete and acceptable Form CEM-4401 is submitted to the Engineer. Upon completion of all contract work and submittal of the final Form CEM-4401, remaining withheld funds associated with this section, "Solid Waste Disposal and Recycling Report," will be released for payment. Withheld funds in conformance with this section shall be in addition to other moneys withheld provided for in the contract. No interest will be due the Contractor on withheld amounts.

Full compensation for preparing and submitting Form CEM-4401, "Solid Waste Disposal and Recycling Report," shall be considered as included in the contract price for the various items of work involved and no additional compensation will be allowed therefor.

#### **5-1.12 BUY AMERICA REQUIREMENTS**

Attention is directed to the "Buy America" requirements of the Surface Transportation Assistance Act of 1982 (Section 165) and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Sections 1041(a) and 1048(a), and the regulations adopted pursuant thereto. In conformance with the law and regulations, all manufacturing processes for steel and iron materials furnished for incorporation into the work on this project shall occur in the United States; with the exception that pig iron and processed, pelletized and reduced iron ore manufactured outside of the United States may be used in the domestic manufacturing process for such steel and iron materials. The application of coatings, such as epoxy coating, galvanizing, painting, and other coatings that protect or enhance the value of steel or iron materials shall be considered a manufacturing process subject to the "Buy America" requirements.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications shall be furnished for steel and iron materials. The certificates, in addition to certifying that the materials comply with the specifications, shall specifically certify that all manufacturing processes for the materials occurred in the United States, except for the above exceptions.

The requirements imposed by the law and regulations do not prevent a minimal use of foreign steel and iron materials if the total combined cost of the materials used does not exceed one-tenth of one percent (0.1 percent) of the total contract cost or \$2,500, whichever is greater. The Contractor shall furnish the Engineer acceptable documentation of the quantity and value of the foreign steel and iron prior to incorporating the materials into the work.

#### **5-1.13 SUBCONTRACTOR AND DBE RECORDS**

The Contractor shall maintain records showing the name and business address of each first-tier subcontractor. The records shall also show the name and business address of every DBE subcontractor, DBE vendor of materials and DBE trucking company, regardless of tier. The records shall show the date of payment and the total dollar figure paid to all of these firms. DBE prime contractors shall also show the date of work performed by their own forces along with the corresponding dollar value of the work.

Upon completion of the contract, a summary of these records shall be prepared on Exhibit 17-F, "Final Report – Utilization of Disadvantaged Business Enterprises (DBE), First –Tier Subcontractors (Form CEM-2402 (F)) and certified correct by the Contractor or the Contractor's authorized representative, and shall be furnished to the Engineer. The form shall be furnished to the Engineer with the Acceptance Statement, which accompanies the Proposed Final Pay Estimate.. \$10,000 will be withheld from payment until the Form CEM-2402 (F) is submitted. The amount will be returned to the Contractor when a satisfactory Form CEM-2402 (F) is submitted.

Prior to the fifteenth of each month, the Contractor shall submit documentation to the Engineer showing the amount paid to DBE trucking companies. The Contractor shall also obtain and submit documentation to the Engineer showing the amount paid by DBE trucking companies to all firms, including owner-operators, for the leasing of trucks. If a DBE leases trucks from a non-DBE the Contractor may count only the fee or commission the DBE receives as a result of the lease arrangement.

The Contractor shall also obtain and submit documentation to the Engineer showing the truck number, owner's name, California Highway Patrol CA number, and if applicable, the DBE certification number of the owner of the truck for all trucks used during that month. This documentation shall be submitted on the form entitled "Monthly Trucking Verification Form" Form CEM-2404 (F) which is available from the Department.



#### **5-1.14 DBE CERTIFICATION STATUS**

If a DBE subcontractor is decertified during the life of the project, the decertified subcontractor shall notify the Contractor in writing with the date of decertification. If a subcontractor becomes a certified DBE during the life of the project, the subcontractor shall notify the Contractor in writing with the date of certification. The Contractor shall furnish the written documentation to the Engineer.

Upon completion of the contract "Disadvantage Business Enterprises (DBE) Certification Status Change Form", Form CEM-2403 (F) indicating the DBE's existing certification status shall be signed and certified correct by the Contractor. The certified form shall be furnished to the Engineer with the Acceptance Statement, which accompanies the Proposed Final Pay Estimate.

#### **5-1.15 PERFORMANCE OF SUBCONTRACTORS**

The subcontractors listed by you in your Proposal shall list therein the name and address of each subcontractor to whom the bidder proposes to subcontract portions of the work in an amount in excess of one-half of one percent of the total bid or \$10,000, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The bidder's attention is invited to other provisions of the Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

UDBEs must perform work or supply materials as listed in the "Local Agency Bidder - UDBE Commitment" form specified under Section 2, "Proposal Requirements and Conditions," of these special provisions. Do not terminate a UDBE listed subcontractor for convenience and perform the work with your own forces or obtain materials from other sources without prior written authorization from the Engineer.

The County grants authorization to use other forces or sources of materials for requests that show any of the following justifications:

1. Listed UDBE fails or refuses to execute a written contract based on plans and specifications for the project.
2. You stipulate a bond is a condition of executing the subcontract and the listed UDBE fails to meet your bond requirements.
3. Work requires a contractor's license and listed UDBE does not have a valid license under Contractors License Law.
4. Listed UDBE fails or refuses to perform the work or furnish the listed materials.
5. Listed UDBE's work is unsatisfactory and not in compliance with the contract.
6. Listed UDBE delays or disrupts the progress of the work.
7. Listed UDBE becomes bankrupt or insolvent.

If a listed UDBE subcontractor is terminated, you must make good faith efforts to find another UDBE subcontractor to substitute for the original UDBE. The substitute UDBE must perform at least the same amount of work as the original UDBE under the contract to the extent needed to meet the UDBE goal.

The substitute UDBE must be certified as a DBE at the time of request for substitution.

The County does not pay for work or material unless it is performed or supplied by the listed UDBE, unless the UDBE is terminated in accordance with this section.

#### **5-1.16 SUBCONTRACTING**

No subcontract releases the Contractor from the contract or relieves the Contractor of their responsibility for a subcontractor's work.

If the Contractor violates Pub Cont Code § 4100 et seq., the County of El Dorado may exercise the remedies provided under Pub Cont Code § 4110. The County of El Dorado may refer the violation to the Contractors State License Board as provided under Pub Cont Code § 4111.

The Contractor shall perform work equaling at least 30 percent of the value of the original total bid with the Contractor's own employees and equipment, owned or rented, with or without operators.

Each subcontract must comply with the contract.

Each subcontractor must have an active and valid State contractor's license with a classification appropriate for the work to be performed (Bus & Prof Code, § 7000 et seq.).

Submit copies of subcontracts upon request by the Engineer.

Before subcontracted work starts, submit a Subcontracting Request form.

Do not use a debarred contractor; a current list of debarred contractors is available at the Department of Industrial Relations' Web site.

Upon request by the Engineer, immediately remove and not again use a subcontractor who fails to prosecute the work satisfactorily.

Each subcontract and any lower tier subcontract that may in turn be made shall include the "Required Contract Provisions Federal-Aid Construction Contracts" in Section 14 of these special provisions. Noncompliance shall be corrected. Payment for subcontracted work involved will be withheld from progress payments due, or to become due, until correction is made. Failure to comply may result in termination of the contract.

#### **5-1.17 PROMPT PROGRESS PAYMENT TO SUBCONTRACTORS**

Attention is directed to Section 7108.5 of the Business and Professions Code, which requires a prime contractor or subcontractor to pay any subcontractor not later than ten (10) days of receipt of each progress payment unless otherwise agreed to in writing. In addition, Federal Regulation (49CFR 26.29) requires a prime contractor or subcontractor to pay a subcontractor no later than thirty (30) days after receipt of each payment, unless any delay or postponement of payment among the parties takes place only for good cause and with the prior written approval of County. Any violation of Section 7108.5 shall subject the violating contractor or subcontractor to the penalties, sanction and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor.

Prime contractors shall include in their subcontracts language providing that prime contractors and subcontractors will use appropriate alternative dispute resolution mechanisms to resolve payment disputes.

#### **5-1.18 PROMPT PAYMENT OF WITHHELD FUNDS TO SUBCONTRACTORS**

The Department shall hold retainage from the prime Contractor and shall make prompt and regular incremental acceptances of portions, as determined by the Department, of the contract work and pay retainage to the prime Contractor based on these acceptances in accordance with 5-1.06 of these special provisions. The prime Contractor or subcontractor shall return all monies withheld in retention from the subcontractor within 30 days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work by the Department. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 days may take place only for good cause and with the Department's prior written approval. Any violation of this provision shall subject the violating Contractor or subcontractor to the penalties, sanctions, and remedies specified in Section 7108.5 of the California Business and Professions Code. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the prime contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract or performance, and/or noncompliance by a subcontractor.

#### **5-1.19 RECORDS**

The Contractor shall maintain cost accounting records for the contract pertaining to, and in such a manner as to provide a clear distinction between, the following 6 categories of costs of work during the life of the contract:

- A. Direct costs of contract item work.

- B. Direct costs of changes in character in conformance with Section 4-1.03C, "Changes in Character of Work," of the Standard Specifications.
- C. Direct costs of extra work in conformance with Section 4-1.03D, "Extra Work," of the Standard Specifications.
- D. Direct costs of work not required by the contract and performed for others.
- E. Direct costs of work performed under a notice of potential claim in conformance with the provisions in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications.
- F. Indirect costs of overhead.

Cost accounting records shall include the information specified for daily extra work reports in Section 9-1.03C, "Records," of the Standard Specifications. The requirements for furnishing the Engineer completed daily extra work reports shall only apply to work paid for on a force account basis.

The cost accounting records for the contract shall be maintained separately from other contracts, during the life of the contract, and for a period of not less than four (4) years after the date of acceptance of the work. If the Contractor intends to file claims against the Department, the Contractor shall keep the cost accounting records specified above until complete resolution of all claims has been reached.

#### **5-1.20 RECORDS EXAMINATION, AUDIT & RETENTION REQUIREMENTS**

Contractor shall maintain and make available to the FHWA, the US DOT, the Comptroller General of the United States, the State of California, the California State Auditor, CIWMB, the Department of Finance, the Bureau of State Audits, and County or to any of their duly authorized representatives all books, papers, job cost records, detailed cost estimates, claims, and accounts, including payment, property, payroll, personnel, subcontractor records, and financial records related to or which arise out of the Work or under terms of this Contract. Contractor shall maintain such books, records, data and documents in accordance with generally accepted accounting principles and in accordance with these special provisions and federal and state requirements. These books, papers, records, claims, and accounts shall be made available for examination during normal business hours and shall be readily available and accessible at Contractor's principal place of business in California, for audit during normal business hours at such place of business. Contractor shall provide office space, photocopies and other assistance to enable audit or inspection representatives to conduct such audits or inspections. This right to audit books and records directly related to this Contract shall also extend to any first-tier subcontractors employed under this Contract. Contractor shall incorporate this provision in any subcontract entered into as a result of this Contract and shall require its subcontractors to agree to cooperate with the above-listed agencies by making all appropriate and relevant Project records available to those agencies for audit and copying.

All of Contractor's books, papers, job cost records, detailed cost estimates, claims, and accounts, including payment, property, payroll, personnel, subcontractor records, and financial records related to or which arise out of the work or under terms of this Contract shall be retained for access, inspection and/or audit by the FHWA, the US DOT, the Comptroller General of the United States, the State, CIWMB, the Department of Finance, the Bureau of State Auditors, County or their duly authorized representatives for at least four (4) years after County's final payment to Contractor and/or the final resolution of any claims under this Contract. Contractor shall incorporate this provision in any subcontract entered into as a result of this Contract.

#### **5-1.21 AUTHORITY OF U.S. COMPTROLLER GENERAL AND INSPECTOR GENERAL ON PROJECTS USING AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA) FUNDS**

In accordance with Section 902 of the ARRA of 2009, the U.S. Comptroller General and their representatives shall have the authority to do the following:

(1) to examine any records of the contractor or any of its subcontractors, or any State or local agency administering such contract, that directly pertain to, and involve transactions relating to, the contract or subcontract; and

(2) to interview any officer or employee of the contractor or any of its subcontractors, or of any State or local government agency administering the contract, regarding such transactions.

Accordingly, the Comptroller General and their representatives shall have the authority and rights as provided under Section 902 of the ARRA with respect to this contract, which is funded with funds made available under the ARRA. Section 902 further states that nothing in this section shall be interpreted to limit or restrict in any way any existing authority of the Comptroller General.

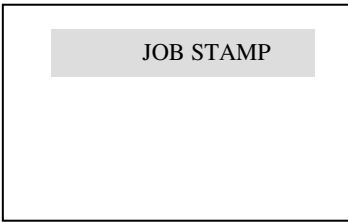
In accordance with Section 1515(a) of the ARRA of 2009, the Inspector General and their representatives shall have the authority to examine any records or interview any employee or officers working on this contract. The contractor is advised that representatives of the inspector general have the authority to examine any record and interview any employee or officer of the contractor, its subcontractors or other firms working on this contract. Section 1515(b) further provides that nothing in this section shall be interpreted to limit or restrict in any way any existing authority of an inspector general.

**5-1.22 MONTHLY EMPLOYMENT REPORT (AMERICAN RECOVERY AND REINVESTMENT ACT)**

For the purpose of complying with the American Recovery and Reinvestment Act of 2009, submit a completed Monthly Employment Report form by the 5th of each month for the previous month.

If you fail to submit a complete and accurate report, the Department withholds 2 percent of the monthly progress estimate. The Department does not withhold more than \$10,000 or less than \$1,000. The Department releases the withhold upon submission of the completed form.

The following is a copy of the Monthly Employment Report form:



**AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA)  
 MONTHLY EMPLOYMENT REPORT**

1. CONTRACT NO.	2. FEDERAL-AID PROJECT NUMBER <i>(From special provisions)</i>					
3. FIRST DAY OF REPORTING PERIOD (mm/dd/yy):	4. REPORT MONTH (mm/yy)		5. CONTRACTING AGENCY			
6. CONTRACTOR NAME AND ADDRESS						
7. EMPLOYMENT DATA						
	EMPLOYEE S		HOURS		PAYROLL	
	NE W HIRES	EXISTI NG EMPLOYEES	NEW HIRES	EXISTI NG EMPLOYEES	NEW HIRES	EXISTING EMPLOYEES
PRIME CONTRACTOR DIRECT, ON-PROJECT JOBS						
SUBCONTRACTOR DIRECT, ON-PROJECT JOBS						
SUBCONTRACTOR NAME(S):						
PRIME AND SUBCONTRACTOR SUBTOTALS						
PRIME AND SUBCONTRACTOR TOTALS (NEW + EXISTING)						
8. CERTIFIED BY CONTRACTOR: <i>(Signature and Title)</i>					DATE	
TO BE COMPLETED BY AGENCY OR AUTHORIZED REPRESENTATIVE						
9. REVIEWED BY CONTRACT ADMINISTRATOR: <i>(Signature and Title)</i>					DATE	

*See instructions that follow*

**COPY DISTRIBUTION:**    **Original** - Resident Engineer                      **Copy** - Contractor                      **Copy** - Caltrans District Local Assistance Engineer

**ADA Notice** For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

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**INSTRUCTIONS FOR COMPLETING ARRA MONTHLY EMPLOYMENT REPORT  
FORM**

- BOX 1. *Contract Number.* The state-assigned project number or ID: district and expenditure authorization (EA).
- BOX 2. *Federal-aid Project Number.* The state-assigned federal-aid project number.
- BOX 3. *First Day of Reporting Period.* The first day of reporting period is the first day of the first payroll period of the month. If the beginning of the month splits the payroll period, then the report will include dates from the prior month as necessary to complete the payroll period.
- BOX 4. *Report Month.* The month and year covered by the report. Reported as “mm/yy” (e.g. May 2009 would be coded as “05/09.”).
- BOX 5. *Contracting Agency.* The name of the contracting agency. For state projects, enter Caltrans. For non-state projects, enter the name of the contracting agency (federal agency, tribe, MPO, city, county, etc.).
- BOX 6. *Contractor Name and Address.* The name and address of the contractor shall include the firm name, street address, city, state, and zip code.
- BOX 7. *Employment Data.*  
*Subcontractor Name(s).* The name of each subcontractor that was active on the project for the reporting month.  
*Employees.* The number of new hires and existing employees on the contractor’s workforce that month, and the number of new hires and existing employees for each of the active subcontractors that month. Do not include material suppliers. Reported as a whole number.  
*Hours.* The total hours on the specified project for the new hires and existing employees on the contractor’s workforce that month, and the total hours for the new hires and existing employees for each of the active subcontractors that month. Reported as a whole number.  
*Payroll.* The total dollar amount of wages paid by the contractor that month for employees on the specified project, and the total dollar amount of wages paid by each of the active subcontractors that month. Rounded to the nearest whole dollar and reported as a whole number. Refer to Section 9-1.03A(1), “Labor,” of the *Standard Specifications*.  
*Prime and Subcontractor Subtotals.* The subtotal for number of employees, hours and payroll for new hires and existing employees for the contractor and listed subcontractor(s).  
*Prime and Subcontractor Totals (New + Existing).* The total number of employees, hours and payroll for the contractor and listed subcontractor(s).
- BOX 8. *Certified by Contractor.*  
*Name.* Contractor representative or person responsible for certification of the information included on the form. By completing the form, the authorized representative certifies that they are knowledgeable of the hours worked and employment status for all employees. Contractors are responsible to maintain data to support the employment form and make it available to the state should it request supporting materials.  
*Date.* The date that the contractor completed the employment form. Reported as “mm/dd/yy.”
- BOX 9. *Reviewed by Contract Administrator.* (To be completed by the local agency or authorized representative.)  
*Name.* Local agency representative, such as the resident engineer or contract manager, or authorized project representative responsible for reviewing the submitted form.  
*Date.* The date that the state representative reviewed the form. Reported as “mm/dd/yy.”



### **5-1.23 PREVAILING WAGE**

Attention is directed to Section 7-1.01A(2), "Prevailing Wage," of the Standard Specifications.

Interested parties can obtain the current wage information by submitting requests to the Department of Industrial Relations, Division of Labor Statistics and Research, PO Box 420603, San Francisco CA 94142-0603, Telephone (415) 703-4708 or by referring to the website at <http://www.dir.ca.gov/dlsr/PWD>. The rates at the time of the bid advertisement date of a project will remain in effect for the life of the project in accordance with the California Code of Regulations, as modified and effective January 27, 1997.

Copies of the general prevailing rate of wages in the County in which the Work is to be done are also on file at the Department of Transportation's principal office, and are available upon request, and in case of projects involving federal funds, federal wage requirements have been included in the Contract Documents.

In accordance with the provisions of Labor Code Section 1810, eight (8) hours of labor shall constitute a legal day's work upon all work done hereunder, and Contractor and any subcontractor employed under this Contract shall also conform to and be bound by the provisions of Labor Code Sections 1810 through 1815.

In the case of federally funded projects, where federal and state prevailing wage requirements apply, compliance with both is required. This project is funded in whole or part by federal funds. Contractor's attention is directed to Section 14 of the Special Provisions and the requirements of, and compliance with the Copeland Act (18 U.S.C. 874 and 29 CFR Part 3), the Davis-Bacon Act (40 U.S.C. 276a to 276a-7 and 29 CFR Part 5), and the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330 and 29 CFR Part 5).

If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by Contractor and subcontractors, Contractor and subcontractors shall pay not less than the federal minimum wage rate which most closely approximates the duties of the employees in question.

The U.S. Department of Transportation (USDOT) provides a toll-free "hotline" service to report bid rigging activities. Bid rigging activities can be reported Mondays through Fridays, between 8:00 a.m. and 5:00 p.m., eastern time, at (800) 424-9071. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report these activities. The "hotline" is part of the USDOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

### **5-1.24 APPRENTICES**

Attention is directed to Sections 1777.5, 1777.6 and 1777.7 of the California Labor Code and Title 8, California Code of Regulations Section 200 et seq. To ensure compliance and complete understanding of the law regarding apprentices, and specifically the required ratio thereunder, each Contractor or subcontractor should, where some question exists, contact the Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, CA 94102, or one of its branch offices prior to commencement of work on the public works contract. Responsibility for compliance with this section lies with the Contractor.

It is County policy to encourage the employment and training of apprentices on public works contracts as may be permitted under local apprenticeship standards.

### **5-1.25 CERTIFIED PAYROLL**

As required under the provisions of Labor Code Section 1776, the Contractor and any subcontractors shall keep accurate payroll records as follows:

1. The payroll records shall show the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman,

apprentice, worker, or other employee employed by the Contractor or subcontractors in connection with this project.

2. A certified copy of all payroll records enumerated above shall be available for inspection at all reasonable hours at the principal office of the Contractor as follows:
  - a. Make available or furnish to the employee or his or her authorized representative on request.
  - b. Make available for inspection or furnished upon request to a representative of the County, the State of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the State Department of Industrial Relations.
  - c. Make available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through either the County, the State Division of Labor Standards Enforcement, or the State Division of Apprenticeship Standards. The requesting party shall, prior to being provided the records, reimburse the costs of preparation by the Contractor, subcontractor, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the Contractor.

#### **5-1.26 DISPUTES RESOLUTION**

As permitted by Public Contract Code section 20104, the County has elected to resolve any claims between the Contractor and the County pursuant to Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2 of the Public Contract Code. Attention is directed to Section 9, "Measurement and Payment" of the Standard Specifications and Section 5-1.34 of these Special Provisions for the contract claim procedure. The provisions of those Sections constitute a non-judicial claim settlement procedure, and also step one of a two-step claim presentment procedure by agreement under Section 930.2 of the California Government Code. Specifically, step one is compliance with the contract claim procedure in accordance with the Contract Documents, including, but not limited to, Section 9, "Measurement and Payment" of the Standard Specifications. Step two is the filing of a timely Government Code Section 910 et seq. claim in accordance with the California Government Code. Any such claim shall affirmatively indicate Contractor's prior compliance with the contract claim procedure herein and previous dispositions under Section 9, "Measurement and Payment" of the Standard Specifications. Any claim that fails to conform to the contract claim procedure required in step one may not be asserted in any subsequent Government Code Section 910 et seq. claim.

As a condition precedent to arbitration or litigation, claims must first be mediated. Mediation shall be non-binding and utilize the services of a mediator mutually acceptable to the parties and, if the parties cannot agree, a mediator selected by the American Arbitration Association from its panel of approved mediators trained in construction industry mediation. All statutes of limitations shall be tolled from the date of the demand for mediation until a date two weeks following the mediation's conclusion. The cost of mediation shall be equally shared by the parties.

If Contractor fails to comply with these claim procedures as to any claim, then Contractor waives its rights to such claim. County shall not be deemed to waive or alter any provision of this section or Section 9, "Measurement and Payment" of the Standard Specifications if, at County's sole discretion, County administers a claim in a manner not in accord with those provisions.

These provisions shall survive termination, breach, or completion of the Contract Documents.

#### **5-1.27 SAFETY AND HEALTH PROVISIONS**

Attention is directed to Section 7-1.06, "Safety and Health Provisions" of the Standard Specifications and these special provisions.

In addition to other specifications, definitions and provisions, the Contractor is also hereby categorized and designated as the following types of employer for this project:

- **Exposing Employer** – the employer whose employees are exposed to a hazard
- **Creating Employer** – the employer who actually is creating a hazard
- **Controlling Employer** – the employer who is responsible and who has the authority for ensuring that a hazardous condition is corrected
- **Correcting Employer** - the employer who has the responsibility for actually correcting a hazard

The Contractor's Safety Officer(s) shall be certified as a competent person for controlling this project's workplace safety. A Contractor's Safety Officer shall be on the site, at a minimum, each and every day that work is in progress or periodically when work is not active and shall have the authority to correct any safety violation. In addition, the Contractor is required to develop a Safety Program specifically for this project, which will be available on site, at all times, and updated periodically during the project.

#### **5-1.28 ACCESS FOR INSPECTION OF WORK**

Representatives of the County, State of California including, but not limited to CIWMB, Caltrans, FHWA, Army Corps of Engineers, California Department of Fish and Game, California Regional Water Quality Control Board Central Valley Region, the El Dorado Irrigation District, Pacific Gas and Electric, AT&T and COMCAST shall at all times have full access for inspection and testing of the work accomplished under this contract and the Contractor shall provide proper and safe facilities for such access.

#### **5-1.29 UTILITIES REQUIRED BY THE CONTRACTOR**

All water, electric current, telephone, or other utility service, including portable sanitary facilities, required by the Contractor during construction shall be furnished at Contractor's own expense.

#### **5-1.30 FINAL INSPECTION AND ACCEPTANCE OF THE CONTRACT**

Section 7-1.17, "Acceptance of Contract" of the Standard Specifications is amended to read:

When the Engineer has made the final inspection and determines that the contract work has been completed in all respects in accordance with the plans and specifications, the Engineer will recommend to the Board of Supervisors that the contract be accepted and the Notice of Acceptance be recorded to accept the contract, and immediately upon and after the acceptance by the Board of Supervisors, notwithstanding Section 7-1.15 "Relief From Maintenance and Responsibility" of the Standard Specifications, the Contractor will be relieved of the duty of maintaining and protecting the work as a whole, and the Contractor will not be required to perform any further work thereon except work required under Section 5-1.02 "Guarantee," of these Special Provisions; and the Contractor shall be relieved of the responsibility for injury to persons or property or damage to the work which occurs after the formal acceptance by the Board of Supervisors.

#### **5-1.31 AIR POLLUTION CONTROL**

Attention is directed to the Section 7-1.01F, "Air Pollution Control" of the Standard Specifications, the section entitled "Dust Control" in these special provisions and these special provisions.

The Contractor's attention is directed to the El Dorado County Air Quality Management District Rules and Regulations, Ordinances and other applicable statutes relating to pollution prevention or abatement.

The Contractor shall comply with applicable State and County Air Quality Management District (AQMD) rules and regulations regarding reduction of construction related impacts on air quality, including the implementation of the following measures, as well as measures found else where in these special provisions and the Standard Specifications:

- Use low-emission onsite mobile construction equipment.
- Maintain equipment in tune per manufacturer's specifications.
- Retard diesel engine injection timing by two to four degrees unless not recommended by manufacturer (due to lower emission output in-place).
- Use reformulated, low-emission diesel fuel.
- Substitute electric and gasoline-powered equipment for diesel-powered equipment where feasible.
- Use catalytic converters on gasoline-powered equipment.
- Do not leave inactive construction equipment idling for prolonged periods (i.e., more than 2 minutes).

Full compensation for conforming to the requirements in this section shall be considered as included in the prices for the various contract items of work and no additional compensation will be allowed therefor.

### 5-1.32 ARCHAEOLOGICAL DISCOVERIES

If archaeological materials, including but not limited to human skeletal material and disarticulated human bone, are discovered at the job site, protect and leave undisturbed and in place archaeological materials in accordance with the following codes and these special provisions:

1. California Public Resources Code, Division 5, Chapter 1.7 § 5097.5
2. California Public Resources Code, Division 5, Chapter 1.75 § 5097.98 and § 5097.99
3. California Administrative Code, Title 14 § 4308
4. California Penal Code, Part 1, Title 14 § 622-1/2
5. California Health and Safety Code, Division 7, Part 1, Chapter 2, § 7050.5

Archaeological materials are the physical remains of past human activity and include historic-period archaeological materials and prehistoric Native American archaeological materials. Nonhuman fossils are not considered to be archaeological except when showing direct evidence of human use or alteration or when found in direct physical association with archaeological materials as described in these special provisions.

Historic-period archaeological materials include cultural remains beginning with initial European contact in California, but at least 50 years old. Historical archaeological materials include:

1. Trash deposits or clearly defined disposal pits containing tin cans, bottles, ceramic dishes, or other refuse indicating previous occupation or use of the site
2. Structural remains of stone, brick, concrete, wood, or other building material found above or below ground or
3. Human skeletal remains from the historic period, with or without coffins or caskets, including any associated grave goods

Prehistoric Native American archaeological materials include:

1. Human skeletal remains or associated burial goods such as beads or ornaments
2. Evidence of tool making or hunting such as arrowheads and associated chipping debris of fine-grained materials such as obsidian, chert, or basalt
3. Evidence of plant processing such as pestles, grinding slabs, or stone bowls
4. Evidence of habitation such as cooking pits, stone hearths, packed or burnt earth floors or
5. Remains from food processing such as concentrations of discarded or burnt animal bone, shellfish remains, or burnt rocks used in cooking

Immediately upon discovery of archaeological materials, stop all work within a 60-foot radius of the archaeological materials and immediately notify the Engineer. Archaeological materials found during construction are the property of the State. Do not resume work within the 60-foot radius of the find until the Engineer gives you written approval. If, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of an archeological find or investigation or recovery of archeological materials, you will be compensated for resulting losses and an extension of time will be granted in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The Department may use other forces to investigate and recover archaeological materials from the location of the find. When ordered by the Engineer furnish labor, material, tools and equipment, to secure the location of the find, and assist in the investigation or recovery of archaeological materials and the cost will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

Full compensation for immediately notifying the Engineer upon discovery of archaeological materials and leaving undisturbed and in place archaeological materials discovered on the job site shall be considered as included in the contract price paid for various items of work involved and no additional compensation will be allowed therefor.

### 5-1.33 PARTNERING

The State will promote the formation of a "Partnering" relationship with the Contractor in order to effectively complete the contract to the benefit of both parties. The purpose of this relationship is to maintain a cooperative communication and to mutually resolve conflicts at the lowest responsible management level.

The Contractor may request the formation of a "Partnering" relationship by submitting a request in writing to the Engineer after approval of the contract. If the Contractor's request for "Partnering" is approved by the Engineer, scheduling of a "Partnering Workshop," selecting the "Partnering" facilitator and workshop site, and other administrative details shall be as agreed to by both parties. If agreed to by the parties, additional "Partnering Workshops" will be conducted as needed throughout the life of the contract.

A one-day "Training in Partnering Concepts" session will be conducted regardless of whether the Contractor requests the formation of a "Partnering" relationship. The "Training in Partnering Concepts" session will be conducted locally for the Contractor's and the Engineer's project representatives. The Contractor shall be represented by a minimum of 2 representatives, one being the Contractor's authorized representative pursuant to Section 5-1.06, "Superintendence," of the Standard Specifications. Scheduling of the "Training in Partnering Concepts" session and selection of the trainer and training site shall be determined cooperatively by the Contractor and the Engineer. If, upon the Contractor's request, "Partnering" is approved by the Engineer, the "Training in Partnering Concepts" session shall be conducted prior to the initial "Partnering Workshop."

The costs involved in providing the "Training in Partnering Concepts" trainer and training site will be borne entirely by the State. The costs will be determined in conformance with the provisions in Section 9-1.03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, and paying to the Contractor the sum of that cost, except no markups will be allowed.

The costs involved in providing the "Partnering Workshop" facilitator and workshop site will be borne equally by the State and the Contractor. The division of cost will be made by determining the cost in providing the "Partnering Workshop" facilitator and workshop site in conformance with the provisions in Section 9-1.03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, and paying to the Contractor one-half of that cost, except no markups will be allowed.

All other costs associated with "Training in Partnering Concepts" and "Partnering Workshops" will be borne separately by the party incurring the costs, such as wages and travel expenses, and no additional compensation will be allowed therefor.

The establishment of a "Partnering" relationship will not change or modify the terms and conditions of the contract and will not relieve either party of the legal requirements of the contract.

#### **5-1.34 DISPUTE REVIEW BOARD**

##### **GENERAL**

To assist in the resolution of disputes or potential claims arising out of the work of this project, a Dispute Review Board, hereinafter referred to as the "DRB," shall be established by the Engineer and Contractor cooperatively upon approval of the contract. The DRB is intended to assist the contract administrative claims resolution process as specified in the provisions in Section 9-1.04, "Notice of Potential Claim," and Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications and these special provisions. The DRB shall not serve as a substitute for provisions in the specifications in regard to filing potential claims. The requirements and procedures established in this section shall be a prerequisite to filing a claim, filing for arbitration, or filing for litigation prior or subsequent to project completion.

The DRB shall be utilized when dispute or potential claim resolution at the project level is unsuccessful. The DRB shall function as specified herein until the day of acceptance of the contract, at which time the work of the DRB will cease except for completion of unfinished reports. No DRB dispute meetings shall take place later than 30 days prior to acceptance of contract. After acceptance of contract, disputes or potential claims which have followed the dispute resolution processes of the Standard Specifications and these special provisions, but have not been resolved, shall be stated or restated by the Contractor, in response to the Proposed Final Estimate within the time limits provided in Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications. The County will review those claims in conformance with the provisions in Section 9-1.07B of the Standard Specifications. Following the adherence to and completion of the contractual administrative claims procedure, the Contractor may file for arbitration in conformance with the provisions in Section 9-1.10, "Arbitration," of the Standard Specifications and these special provisions.

Disputes, as used in this section, shall include differences of opinion, properly noticed as provided hereinafter, between the County and Contractor on matters related to the work and other subjects considered by the County or Contractor, or by both, to be of concern to the DRB on this project, except matters relating to Contractor, subcontractor or supplier potential claims not actionable against the Department as specified in these special provisions or quantification of disputes for overhead type expenses or costs. Disputes for overhead type expenses or costs shall conform to the requirements of Section 9-1.07B, "Final Payment and Claims," of the Standard

Specifications. Whenever the term "dispute" or "disputes" is used herein, it shall be deemed to include potential claims as well as disputes.

The DRB shall serve as an advisory body to assist in the resolution of disputes between the County and the Contractor, hereinafter referred to as the "parties." The DRB shall consider disputes referred to it, and furnish written reports containing findings and recommendations pertaining to those disputes, to the parties to aid in resolution of the differences between them. DRB findings and recommendations are not binding on the parties.

### **SELECTION PROCESS, DISCLOSURE AND APPOINTMENTS**

The DRB shall consist of one member selected by the County and approved by the Contractor, one member selected by the Contractor and approved by the County, and a third member selected by the first 2 members and approved by both the County and the Contractor. The third member shall act as the DRB Chairperson.

DRB members shall be especially knowledgeable in the type of construction and contract documents potentially anticipated by the contract. DRB members shall discharge their responsibilities impartially as an independent body, considering the facts and circumstances related to the matters under consideration, pertinent provisions of the contract and applicable laws and regulations.

The County and the Contractor shall nominate and approve DRB members in conformance with the terms and conditions of the Dispute Review Board Agreement and these special provisions, within 45 days of the approval of the contract. Each party shall provide written notification to the other of the name of their selected DRB nominee along with the prospective member's complete written disclosure statement.

Disclosure statements shall include a resume of the prospective member's experience and a declaration statement describing past, present, anticipated, and planned relationships, including indirect relationships through the prospective member's primary or full-time employer, to this project and with the parties involved in this construction contract, including but not limited to, relevant subcontractors or suppliers to the parties, parties' principals, or parties' counsel. DRB members shall also include a full disclosure of close professional or personal relationships with all key members of the contract. Objections to nominees must be based on a specific breach or violation of nominee responsibilities or on nominee qualifications under these provisions unless otherwise specified. The Contractor or the County may, on a one-time basis, object to the other's nominee without specifying a reason and this person will not be selected for the DRB. Another person shall then be nominated within 15 days.

The first duty of the County and Contractor selected members of the DRB shall be to select and recommend a prospective third DRB member to the parties for final selection and approval. The first 2 DRB members shall proceed with the selection of the third DRB member immediately upon receiving written notification from the County of their selection, and shall provide their recommendation simultaneously to the parties within 15 days of the notification.

The first 2 DRB members shall select a third DRB member subject to mutual approval of the parties or may mutually concur on a list of potentially acceptable third DRB members and submit the list to the parties for final selection and approval of the third member. The goal in the selection of the third member is to complement the professional experience of the first 2 members and to provide leadership for the DRB's activities.

The third prospective DRB member shall supply a full disclosure statement to the first 2 DRB members and to the parties prior to appointment.

An impasse shall be considered to have been reached if the parties are unable to approve a third member within 15 days of receipt of the recommendation of the first 2 DRB members, or if the first 2 DRB members are unable to agree upon a recommendation within their 15 day time limit. In the event of an impasse in selection of third DRB member the County and the Contractor shall each propose 3 candidates for the third DRB member position. The parties shall select the candidates proposed under this paragraph from the current list of arbitrators certified by the Public Works Contract Arbitration Committee created by Article 7.2 (commencing with Section 10245) of the State Contract Act. The first 2 DRB members shall then select one of the 6 proposed candidates in a blind draw.

No DRB member shall have prior direct involvement in this contract. No member shall have a financial interest in this contract or the parties thereto, within a period of 6 months prior to award of this contract or during the contract, except as follows:

- A. Compensation for services on this DRB.
- B. Ownership interest in a party or parties, documented by the prospective DRB member, that has been reviewed and determined in writing by the County to be sufficiently insignificant to render the prospective member acceptable to the County.
- C. Service as a member of other Dispute Review Boards on other contracts.

- D. Retirement payments or pensions received from a party that are not tied to, dependent on or affected by the net worth of the party.
- E. The above provisions apply to parties having a financial interest in this contract, including but not limited to contractors, subcontractors, suppliers, consultants, and legal and business services.

The Contractor or the County may reject any of the 3 DRB members who fail to fully comply at all times with all required employment and financial disclosure conditions of DRB membership as described in the Dispute Review Board Agreement and as specified herein. A copy of the Dispute Review Board Agreement is included in this section.

The Contractor, the County, and the 3 members of the DRB shall complete and adhere to the Dispute Review Board Agreement in administration of this DRB within 15 days of the parties' concurrence in the selection of the third member. No DRB meeting shall take place until the Dispute Review Board Agreement has been signed by all parties. The County authorizes the Engineer to execute and administer the terms of the Agreement. The person(s) designated by the Contractor as authorized to execute contract change orders shall be authorized to execute and administer the terms of this agreement, or to delegate the authority in writing. The operation of the DRB shall be in conformance with the terms of the Dispute Review Board Agreement.

### **COMPENSATION**

The County and the Contractor shall bear the costs and expenses of the DRB equally. Each DRB member shall be compensated at an agreed rate of \$1,200 per day if time spent per meeting, including on-site time plus one hour of travel time, is greater than 4 hours. Each DRB member shall be compensated at an agreed rate of \$700 per day if time spent per meeting, including on-site time plus one hour of travel time, is less than or equal to 4 hours. The agreed rates shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof, that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB members in review and research activities outside the official DRB meetings unless that time, (such as time spent evaluating and preparing recommendations on specific issues presented to the DRB), has been specifically agreed to in advance by the County and Contractor. Time away from the project, which has been specifically agreed to in advance by the parties, will be compensated at an agreed rate of \$125 per hour. The agreed amount of \$125 per hour shall include all incidentals including expenses for telephone, fax, and computer services. Members serving on more than one DRB involving the Department, regardless of the number of meetings per day, shall not be paid more than the all inclusive rate per day or rate per hour for an individual project. The County will provide, at no cost to the Contractor, administrative services such as conference facilities and secretarial services to the DRB. These special provisions and the Dispute Review Board Agreement state the provisions for compensation and expenses of the DRB. DRB members shall be compensated at the same daily and hourly rate. The Contractor shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges from invoices submitted by each DRB member. The County will reimburse the Contractor for the County 's share of the costs. There will be no markups applied to expenses connected with the DRB, either by the DRB members or by the Contractor when requesting payment of the County 's share of DRB expenses. Regardless of the DRB recommendation, neither party shall be entitled to reimbursement of DRB costs from the other party.

### **REPLACEMENT OF DRB MEMBERS**

Service of a DRB member may be terminated at any time with not less than 15 days notice as follows:

- A. The County may terminate service of the County appointed member.
- B. The Contractor may terminate service of the Contractor appointed member.
- C. Upon the written recommendation of the County and Contractor appointed members for the removal of the third member.
- D. Upon resignation of a member.
- E. The County or Contractor may terminate the service of any member who fails to fully comply with all required employment and financial disclosure conditions of DRB membership.

When a member of the DRB is replaced, the replacement member shall be appointed in the same manner as the replaced member was appointed. The appointment of a replacement DRB member will begin promptly upon determination of the need for replacement and shall be completed within 15 days. Changes in either of the DRB members chosen by the 2 parties will not require re-selection of the third member, unless both parties agree to such

re-selection in writing. The Dispute Review Board Agreement shall be amended to reflect the change of a DRB member.

## **OPERATION**

The following procedure shall be used for dispute resolution:

- A. If the Contractor objects to any decision, act or order of the Engineer, the Contractor shall give written notice of potential claim in conformance with the provisions in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications and these special provisions, including the provision of applicable cost documentation; or file written protests or notices in conformance with the provisions in the Standard Specifications and these special provisions.
- B. The Engineer will respond, in writing, to the Contractor's written supplemental notice of potential claim within 20 days of receipt of the notice.
- C. Within 15 days after receipt of the Engineer's written response, the Contractor shall, if the Contractor still objects, file a written reply with the Engineer, stating clearly and in detail the basis of the objection.
- D. Following an objection to the Engineer's written response, the Contractor shall refer the dispute to the DRB if the Contractor wishes to further pursue the objection to the Engineer's decision. The Contractor shall make the referral in writing to the DRB, simultaneously copied to the County, within 21 days after receipt of the written response from the Engineer. The written dispute referral shall describe the disputed matter in individual discrete segments so that it will be clear to both parties and the DRB what discrete elements of the dispute have been resolved, and which remain unresolved, and shall include an estimate of the cost of the affected work and impacts, if any, on project completion.
- E. By failing to submit the written notice of referral to the DRB, within 21 days after receipt of the Engineer's written response to the supplemental notice of potential claim, the Contractor waives future claims and arbitration on the matter in contention.
- F. The Contractor and the County shall each be afforded an opportunity to be present and to be heard by the DRB, and to offer evidence. Either party furnishing written evidence or documentation to the DRB must furnish copies of such information to the other party a minimum of 15 days prior to the date the DRB is scheduled to convene the meeting for the dispute. Either party shall produce such additional evidence as the DRB may deem necessary to reach an understanding and a determination of the dispute. The party furnishing additional evidence shall furnish copies of such additional evidence to the other party at the same time the evidence is provided to the DRB. The DRB shall not consider evidence not furnished in conformance with the terms specified herein.
- G. Upon receipt by the DRB of a written referral of a dispute, the DRB shall convene to review and consider the dispute. The dispute meeting shall be held no earlier than 30 days and no later than 60 days after receipt of the written referral unless otherwise agreed to by all parties. The DRB shall determine the time and location of the DRB dispute meeting, with due consideration for the needs and preferences of the parties while recognizing the paramount importance of a timely hearing of the dispute.
- H. There shall be no participation of either party's attorneys at DRB dispute meetings.
- I. There shall be no participation of persons who are not directly involved in the contract or who do not have direct knowledge of the dispute, including but not limited to consultants, except for expert testimony allowed at the discretion of the DRB and with approval prior to the dispute meeting by both parties.
- J. The DRB shall furnish a report, containing findings and recommendations as described in the Dispute Review Board Agreement, in writing to both the County and the Contractor. The DRB may request clarifying information of either party within 10 days after the DRB dispute meeting. Requested information shall be submitted to the DRB within 10 days of the DRB request. The DRB shall complete its report, including minority opinion, if any, and submit it to the parties within 30 days of the DRB dispute meeting, except that time extensions may be granted at the request of the DRB with the written concurrence of both parties. The report shall include the facts and circumstances related to the matters under consideration, pertinent provisions of the contract, applicable laws and regulations, and actual costs and time incurred as shown on the Contractor's cost accounting records. The DRB shall make recommendations on the merit of the dispute and, if appropriate, recommend guidelines for determining compensation.
- K. Within 30 days after receiving the DRB's report, both the County and the Contractor shall respond to the DRB in writing signifying that the dispute is either resolved or remains unresolved. Failure to provide the written response within the time specified, or a written rejection of the DRB's recommendation or response



- to a request for reconsideration presented in the report by either party, shall conclusively indicate that the party(s) failing to respond accepts the DRB recommendation. Immediately after responses have been received from both parties, the DRB shall provide copies of both responses to the parties simultaneously. Either party may request clarification of elements of the DRB's report from the DRB prior to responding to the report. The DRB shall consider any clarification request only if submitted within 10 days of receipt of the DRB's report, and if submitted simultaneously in writing to both the DRB and the other party. Each party may submit only one request for clarification for any individual DRB report. The DRB shall respond, in writing, to requests for clarification within 10 days of receipt of such requests.
- L. The DRB's recommendations, stated in the DRB's reports, are not binding on either party. Either party may seek a reconsideration of a recommendation of the DRB. The DRB shall only grant a reconsideration based upon submission of new evidence and if the request is submitted within the 30-day time limit specified for response to the DRB's written report. Each party may submit only one request for reconsideration regarding an individual DRB recommendation.
  - M. If the County and the Contractor are able to resolve their dispute with the aid of the DRB's report, the County and Contractor shall promptly accept and implement the recommendations of the DRB. If the parties cannot agree on compensation within 60 days of the acceptance by both parties of the DRB's recommendation, either party may request the DRB to make a recommendation regarding compensation.
  - N. The County or the Contractor shall not call DRB members who served on the DRB for this contract as witnesses in arbitration proceedings which may arise from this contract, and all documents created by the DRB shall be inadmissible as evidence in subsequent arbitration proceedings, except the DRB's final written reports on each issue brought before it.
  - O. The County and Contractor shall jointly indemnify and hold harmless the DRB members from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRB.
  - P. The DRB members shall have no claim against the County or the Contractor, or both, from claimed harm arising out of the parties' evaluations of the DRB's report.

#### **DISPUTES INVOLVING SUBCONTRACTOR POTENTIAL CLAIMS**

For purposes of this section, a "subcontractor potential claim" shall include any potential claim by a subcontractor (including also any pass through potential claims by a lower tier subcontractor or supplier) against the Contractor that is actionable by the Contractor against the Department which arises from the work, services, or materials provided or to be provided in connection with the contract. If the Contractor determines to pursue a dispute against the Department that includes a subcontractor potential claim, the dispute shall be processed and resolved in conformance with these special provisions and in conformance with the following:

- A. The Contractor shall identify clearly in submissions pursuant to this section, that portion of the dispute that involves a subcontractor potential claim or potential claims.
- B. The Contractor shall include, as part of its submission pursuant to Step D above, a certification (False Claims Act Certification) by the subcontractor's or supplier's officer, partner, or authorized representative with authority to bind the subcontractor and with direct knowledge of the facts underlying the subcontractor potential claim. The Contractor shall submit a certification that the subcontractor potential claim is acknowledged and forwarded by the Contractor. The form for these certifications is available from the Engineer.
- C. At DRB dispute meetings involving one or more subcontractor potential claims, the Contractor shall require that each subcontractor involved in the dispute have present an authorized representative with actual knowledge of the facts underlying the subcontractor potential claim to assist in presenting the subcontractor potential claim and to answer questions raised by the DRB members or the Department's representatives.
- D. Failure by the Contractor to declare a subcontractor potential claim on behalf of its subcontractor (including lower tier subcontractors' and suppliers' pass through potential claims) at the time of submission of the Contractor's potential claims, as provided hereunder, shall constitute a release of the County by the Contractor of such subcontractor potential claim.
- E. The Contractor shall include in all subcontracts under this contract that subcontractors and suppliers of any tier (a) agree to submit subcontractor potential claims to the Contractor in a proper form and in sufficient time to allow processing by the Contractor in conformance with the Dispute Review Board resolution specifications; (b) agree to be bound by the terms of the Dispute Review Board provisions to the extent

applicable to subcontractor potential claims; (c) agree that, to the extent a subcontractor potential claim is involved, completion of all steps required under these Dispute Review Board special provisions shall be a condition precedent to pursuit by the subcontractor of other remedies permitted by law, including without limitation of a lawsuit against the Contractor; and (d) agree that the existence of a dispute resolution process for disputes involving subcontractor potential claims shall not be deemed to create any claim, right, or cause of action by any subcontractor or supplier against the Department.

Notwithstanding the foregoing, this Dispute Review Board special provision shall not apply to, and the DRB shall not have the authority to consider, subcontractor potential claims between the subcontractor(s) or supplier(s) and the Contractor that are not actionable by the Contractor against the Department.

**DISPUTE REVIEW BOARD AGREEMENT**

A copy of the "Dispute Review Board Agreement" to be executed by the Contractor, County and the 3 DRB members after approval of the contract follows:

Form 6202 Rev (09/01/02)

**DISPUTE REVIEW BOARD AGREEMENT**

\_\_\_\_\_  
(Contract Identification)

Contract No. \_\_\_\_\_

**THIS DISPUTE REVIEW BOARD AGREEMENT, hereinafter called "AGREEMENT"**, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, between the County of El Dorado, acting through the County of El Dorado Department of Transportation and the Director of Transportation, hereinafter called the "COUNTY," \_\_\_\_\_ hereinafter called the "CONTRACTOR," and the Dispute Review Board, hereinafter called the "DRB" consisting of the following members:

\_\_\_\_\_,  
(Contractor Appointee)

\_\_\_\_\_,  
(County Appointee)

and \_\_\_\_\_  
(Third Person)

WITNESSETH, that

WHEREAS, the COUNTY and the CONTRACTOR, hereinafter called the "parties," are now engaged in the construction on the State Highway project referenced above; and

WHEREAS, the special provisions for the above referenced contract provides for the establishment and operation of the DRB to assist in resolving disputes; and

WHEREAS, the DRB is composed of three members, one selected by the COUNTY, one selected by the CONTRACTOR, and the third member selected by the other two members and approved by the parties;

NOW THEREFORE, in consideration of the terms, conditions, covenants, and performance contained herein, or attached and incorporated and made a part hereof, the COUNTY, the CONTRACTOR, and the DRB members hereto agree as follows:

**SECTION I DESCRIPTION OF WORK**

To assist in the resolution of disputes between the parties, the contract provides for the establishment and the operation of the DRB. The intent of the DRB is to fairly and impartially consider disputes placed before it and provide written recommendations for resolution of these disputes to both parties. The members of this DRB shall perform the services necessary to participate in the DRB's actions as designated in Section II, Scope of Work.

## **SECTION II SCOPE OF WORK**

The scope of work of the DRB includes, but is not limited to, the following:

### **A. OBJECTIVE**

The principal objective of the DRB is to assist in the timely resolution of disputes between the parties arising from performance of this contract. It is not intended for either party to default on their normal responsibility to amicably and fairly settle their differences by indiscriminately assigning them to the DRB. It is intended that the mere existence of the DRB will encourage the parties to resolve disputes without resorting to this review procedure. But when a dispute that is serious enough to warrant the DRB's review does develop, the process for prompt and efficient action will be in place.

### **B. PROCEDURES**

The DRB shall render written reports on disputes between the parties arising from the construction contract. Prior to consideration of a dispute, the DRB shall establish rules and regulations that will govern the conduct of its business and reporting procedures in conformance with the requirements of the contract and the terms of this AGREEMENT. DRB recommendations, resulting from its consideration of a dispute, shall be furnished in writing to both parties. The recommendations shall be based on facts and circumstances involved in the dispute, pertinent contract provisions, applicable laws and regulations. The recommendations shall find one responsible party in a dispute; shared or "jury" determinations shall not be rendered. The DRB shall make recommendations on the merit of the dispute, and if appropriate, recommend guidelines for determining compensation. If the parties cannot agree on compensation within 60 days of the acceptance by both parties of the DRB's recommendation, either party may request the DRB to make a recommendation regarding compensation.

The DRB shall refrain from officially giving advice or consulting services to anyone involved in the contract. The individual members shall act in a completely independent manner and while serving as members of the DRB shall have no consulting business connections with either party or its principals or attorneys or other affiliates (subcontractors, suppliers, etc.) who have a beneficial interest in the contract.

During scheduled meetings of the DRB as well as during dispute meetings, DRB members shall refrain from expressing opinions on the merits of statements on matters under dispute or potential dispute. Opinions of DRB members expressed in private sessions shall be kept strictly confidential. Individual DRB members shall not meet with, or discuss contract issues with individual parties, except as directed by the DRB Chairperson. Such discussions or meetings shall be disclosed to both parties. Other discussions regarding the project between the DRB members and the parties shall be in the presence of all three members and both parties. Individual DRB members shall not undertake independent investigations of any kind pertaining to disputes or potential disputes, except with the knowledge of both parties and as expressly directed by the DRB Chairperson.

### **C. CONSTRUCTION SITE VISITS, PROGRESS MEETINGS AND FIELD INSPECTIONS**

The DRB members shall visit the project site and meet with representatives of the parties to keep abreast of construction activities and to develop familiarity with the work in progress. Scheduled progress meetings shall be held at or near the project site. The DRB shall meet at least once at the start of the project, and at least once every 4 months thereafter. The frequency, exact time, and duration of additional site visits and progress meetings shall be as recommended by the DRB and approved by the parties consistent with the construction activities or matters under consideration and dispute. Each meeting shall consist of a round table discussion and a field inspection of the work being performed on the contract, if necessary. Each meeting shall be attended by representatives of both parties. The agenda shall generally be as follows:

1. Meeting opened by the DRB Chairperson.
2. Remarks by the COUNTY's representative.
3. A description by the CONTRACTOR's representative of work accomplished since the last meeting; the current schedule status of the work; and a forecast for the coming period.
4. An outline by the CONTRACTOR's representative of potential problems and a description of proposed solutions.
5. An outline by the COUNTY's representative of the status of the work as the COUNTY views it.

6. A brief description by the CONTRACTOR's or COUNTY's representative of potential claims or disputes which have surfaced since the last meeting.
7. A summary by the COUNTY's representative, the CONTRACTOR's representative, or the DRB of the status of past disputes and potential claims.

The COUNTY's representative will prepare minutes of all progress meetings and circulate them for revision and approval by all concerned within 10 days of the meeting.

The field inspection shall cover all active segments of the work, the DRB being accompanied by both parties' representatives. The field inspection may be waived upon mutual agreement of the parties.

#### **D. DRB CONSIDERATION AND HANDLING OF DISPUTES**

Upon receipt by the DRB of a written referral of a dispute, the DRB shall convene to review and consider the dispute. The dispute meeting shall be held no earlier than 30 days and no later than 60 days after receipt of the written referral, unless otherwise agreed to by all parties. The DRB shall determine the time and location of DRB dispute meetings, with due consideration for the needs and preferences of the parties while recognizing the paramount importance of speedy resolution of issues. No dispute meetings shall take place later than 30 days prior to acceptance of contract.

Normally, dispute meetings shall be conducted at or near the project site. However, any location that would be more convenient and still provide required facilities and access to necessary documentation shall be satisfactory.

Both parties shall be given the opportunity to present their evidence at these dispute meetings. It is expressly understood that the DRB members are to act impartially and independently in the consideration of the contract provisions, applicable laws and regulations, and the facts and conditions surrounding any dispute presented by either party, and that the recommendations concerning any such dispute are advisory and nonbinding on the parties.

The DRB may request that written documentation and arguments from both parties be sent to each DRB member, through the DRB Chairperson, for review before the dispute meeting begins. A party furnishing written documentation to the DRB shall furnish copies of such information to the other party at the same time that such information is supplied to the DRB.

DRB dispute meetings shall be informal. There shall be no testimony under oath or cross-examination. There shall be no reporting of the procedures by a shorthand reporter or by electronic means. Documents and verbal statements shall be received by the DRB in conformance with acceptance standards established by the DRB. These standards need not comply with prescribed legal laws of evidence.

The third DRB member shall act as Chairperson for dispute meetings and all other DRB activities. The parties shall have a representative at all dispute meetings. Failure to attend a duly noticed dispute meeting by either of the parties shall be conclusively considered by the DRB as indication that the non-attending party considers written submittals as their entire and complete argument. The claimant shall discuss the dispute, followed by the other party. Each party shall then be allowed one or more rebuttals until all aspects of the dispute are thoroughly covered. DRB members shall ask questions, seek clarification, and request further data from either of the parties as may be necessary to assist in making a fully informed recommendation. The DRB may request from either party documents or information that would assist the DRB in making its findings and recommendations including, but not limited to, documents used by the CONTRACTOR in preparing the bid for the project. A refusal by a party to provide information requested by the DRB may be considered by the DRB as an indication that the requested material would tend to disprove that party's position. In large or complex cases, additional dispute meetings may be necessary in order to consider all the evidence presented by both parties. All involved parties shall maintain the confidentiality of all documents and information, as provided in this AGREEMENT.

During dispute meetings, no DRB member shall express an opinion concerning the merit of any facet of the case. DRB deliberations shall be conducted in private, with interim individual views kept strictly confidential.

After dispute meetings are concluded, the DRB shall meet in private and reach a conclusion supported by 2 or more members. Private sessions of the DRB may be held at a location other than the job site or by electronic conferencing as deemed appropriate, in order to expedite the process.

The DRB's findings and recommendations, along with discussion of reasons therefor, shall then be submitted as a written report to both parties. Recommendations shall be based on the pertinent contract provisions, applicable laws and regulations, and facts and circumstances related to the dispute. The report shall be thorough in discussing the facts considered, the contract language, law or regulation viewed by the DRB as pertinent to the issues, and the DRB's interpretation and philosophy in arriving at its conclusions and recommendations. The DRB's report shall stand on its own, without attachments or appendices. The DRB Chairperson shall furnish a copy of the written

recommendation report to the El Dorado County Director of Transportation, 2850 Fairlane Court, Placerville, CA 95667.

With prior written approval of both parties, the DRB may obtain technical services necessary to adequately review the disputes presented, including audit, geotechnical, schedule analysis and other services. The parties' technical staff may supply those services as appropriate. The cost of technical services, as agreed to by the parties, shall be borne equally by the 2 parties as specified in an approved contract change order. The CONTRACTOR will not be entitled to markups for the payments made for these services.

The DRB shall resist submittal of incremental portions of information by either party, in the interest of making a fully informed decision and recommendation.

The DRB shall make every effort to reach a unanimous decision. If this proves impossible, the dissenting member shall prepare a minority opinion, which shall be included in the DRB's report.

Although both parties should place weight upon the DRB's recommendations, they are not binding. Either party may appeal a recommendation to the DRB for reconsideration. However, reconsideration shall only be allowed when there is new evidence to present, and the DRB shall accept only one appeal from each party pertaining to an individual DRB recommendation. The DRB shall hear appeals in conformance with the terms described in the Section entitled "Dispute Review Board" in the special provisions.

#### **E. DRB MEMBER REPLACEMENT**

Should the need arise to appoint a replacement DRB member, the replacement DRB member shall be appointed in the same manner as the original DRB members were appointed. The selection of a replacement DRB member shall begin promptly upon notification of the necessity for a replacement and shall be completed within 15 days. This AGREEMENT shall be amended to indicate change in DRB membership.

### **SECTION III CONTRACTOR RESPONSIBILITIES**

The CONTRACTOR shall furnish to each DRB member one copy of pertinent documents that are or may become necessary for the DRB to perform their function. Pertinent documents are written notices of potential claim, responses to those notices, drawings or sketches, calculations, procedures, schedules, estimates, or other documents which are used in the performance of the work or in justifying or substantiating the CONTRACTOR's position. The CONTRACTOR shall also furnish a copy of such pertinent documents to the COUNTY, in conformance with the terms outlined in the special provisions.

### **SECTION IV COUNTY RESPONSIBILITIES**

The COUNTY will furnish the following services and items:

#### **A. CONTRACT RELATED DOCUMENTS**

The COUNTY will furnish to each DRB member one copy of Notice to Contractors and Special Provisions, Proposal and Contract, Plans, Standard Specifications, and Standard Plans, change orders, written instructions issued by the COUNTY to the CONTRACTOR, or other documents pertinent to any dispute that has been referred to the DRB and necessary for the DRB to perform its function.

#### **B. COORDINATION AND SERVICES**

The COUNTY, through the Engineer, will, in cooperation with the CONTRACTOR, coordinate the operations of the DRB. The Engineer will arrange or provide conference facilities at or near the project site and provide secretarial and copying services to the DRB without charge to the CONTRACTOR.

### **SECTION V TIME FOR BEGINNING AND COMPLETION**

Once established, the DRB shall be in operation until the day of acceptance of the contract. The DRB members shall not begin work under the terms of this AGREEMENT until authorized in writing by the STATE.

### **SECTION VI PAYMENT**

#### **A. ALL INCLUSIVE RATE PAYMENT**

The COUNTY and the CONTRACTOR shall bear the costs and expenses of the DRB equally. Each DRB member shall be compensated at an agreed rate of \$1,200 per day if time spent per meeting, including on-site time plus one hour of travel time, is greater than 4 hours. Each DRB member shall be compensated at an agreed rate of \$700 per day if time spent per meeting, including on-site time plus one hour of travel time, is less than or equal to 4 hours. The agreed rates shall be considered full compensation for on-site time, travel expenses, transportation,

lodging, time for travel and incidentals for each day, or portion thereof, that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB members in review and research activities outside the official DRB meetings unless that time has been specifically agreed to in advance by the COUNTY and CONTRACTOR. Time away from the project that has been specifically agreed to in advance by the parties will be compensated at an agreed rate of \$125 per hour. The agreed amount of \$125 per hour shall include all incidentals including expenses for telephone, fax, and computer services. Members serving on more than one DRB involving the County, regardless of the number of meetings per day, shall not be paid more than the all inclusive rate per day or rate per hour for an individual project. The COUNTY will provide, at no cost to the CONTRACTOR, administrative services such as conference facilities and secretarial services to the DRB.

#### **B. PAYMENTS**

DRB members shall be compensated at the same rate. The CONTRACTOR shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges from invoices submitted by each DRB member. The COUNTY will reimburse the CONTRACTOR for its share of the costs of the DRB.

The DRB members may submit invoices to the CONTRACTOR for partial payment for work performed and services rendered for their participation in authorized meetings not more often than once per month during the progress of the work. The invoices shall be in a format approved by the parties and accompanied by a general description of activities performed during that billing period. Payment for hourly fees, at the agreed rate, shall not be paid to a DRB member until the amount and extent of those fees are approved by the COUNTY and CONTRACTOR.

Invoices shall be accompanied by original supporting documents, which the CONTRACTOR shall include with the extra work billing when submitting for reimbursement of the COUNTY's share of cost from the COUNTY. The CONTRACTOR will be reimbursed for one-half of approved costs of the DRB. No markups will be added to the CONTRACTOR's payment.

#### **C. INSPECTION OF COSTS RECORDS**

The DRB members and the CONTRACTOR shall keep available for inspection by representatives of the COUNTY and the United States, for a period of 3 years after final payment, the cost records and accounts pertaining to this AGREEMENT. If any litigation, claim, or audit arising out of, in connection with, or related to this contract is initiated before the expiration of the 3-year period, the cost records and accounts shall be retained until such litigation, claim, or audit involving the records is completed.

#### **SECTION VII ASSIGNMENT OF TASKS OF WORK**

The DRB members shall not assign the work of this AGREEMENT.

#### **SECTION VIII TERMINATION OF DRB MEMBERS**

DRB members may resign from the DRB by providing not less than 15 days written notice of the resignation to the COUNTY and CONTRACTOR. DRB members may be terminated by their original appointing power or by either party, for failing to fully comply at all times with all required employment and financial disclosure conditions of DRB membership in conformance with the terms of the contract.

#### **SECTION IX LEGAL RELATIONS**

The parties hereto mutually understand and agree that the DRB member in the performance of duties on the DRB, is acting in the capacity of an independent agent and not as an employee of either party.

No party to this AGREEMENT shall bear a greater responsibility for damages or personal injury than is normally provided by Federal or State of California Law.

Notwithstanding the provisions of this contract that require the CONTRACTOR to indemnify and hold harmless the COUNTY, the parties shall jointly indemnify and hold harmless the DRB members from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRB.

#### **SECTION X CONFIDENTIALITY**

The parties hereto mutually understand and agree that all documents and records provided by the parties in reference to issues brought before the DRB, which documents and records are marked "Confidential - for use by the DRB only," shall be kept in confidence and used only for the purpose of resolution of subject disputes, and for assisting in development of DRB findings and recommendations; that such documents and records will not be

utilized or revealed to others, except to officials of the parties who are authorized to act on the subject disputes, for any purposes, during the life of the DRB. Upon termination of this AGREEMENT, said confidential documents and records, and all copies thereof, shall be returned to the parties who furnished them to the DRB. However, the parties understand that such documents shall be subsequently discoverable and admissible in court or arbitration proceedings unless a protective order has been obtained by the party seeking further confidentiality.

**SECTION XI DISPUTES**

Disputes between the parties hereto, including disputes between the DRB members and either party or both parties, arising out of the work or other terms of this AGREEMENT, which cannot be resolved by negotiation and mutual concurrence between the parties, or through the administrative process provided in the contract, shall be resolved by arbitration as provided in Section 9-1.10, "Arbitration," of the Standard Specifications.

**SECTION XII VENUE, APPLICABLE LAW, AND PERSONAL JURISDICTION**

In the event that any party, including an individual member of the DRB, deems it necessary to institute arbitration proceedings to enforce any right or obligation under this AGREEMENT, the parties hereto agree that such action shall be initiated in the Office of Administrative Hearings of the State of California. The parties hereto agree that all questions shall be resolved by arbitration by application of California law and that the parties to such arbitration shall have the right of appeal from such decisions to the Superior Court in conformance with the laws of the State of California. Venue for the arbitration shall be Sacramento or any other location as agreed to by the parties.

**SECTION XIII FEDERAL REVIEW AND REQUIREMENTS**

On Federal-Aid contracts, the Federal Highway Administration shall have the right to review the work of the DRB in progress, except for private meetings or deliberations of the DRB.

Other Federal requirements in this agreement shall only apply to Federal-Aid contracts.

**SECTION XIV CERTIFICATION OF THE CONTRACTOR, THE DRB MEMBERS, AND THE COUNTY**

IN WITNESS WHEREOF, the parties hereto have executed this AGREEMENT as of the day and year first above written.

DRB MEMBER

DRB MEMBER

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title : \_\_\_\_\_

DRB MEMBER

By : \_\_\_\_\_

Title : \_\_\_\_\_

CONTRACTOR

COUNTY OF EL DORADO  
DEPARTMENT OF TRANSPORTATION

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

**5-1.35 RESPONSIBILITY TO OTHER ENTITIES**

The Contractor shall be responsible for any liability imposed by law and for injuries to or death of any person including, but not limited to, workers and the public or damage to property, and shall indemnify and save harmless any county, city or district, its officers and employees connected with the work, within the limits of which county, city or district the work is being performed, all in the same manner and to the same extent conforming to the provisions in Section 7-1.12, "Indemnification and Insurance," of the Standard Specifications, and Article 5 of the Agreement, for the protection of the State of California and all officers and employees thereof connected with the work.

**5-1.36 COMPENSATION ADJUSTMENTS FOR PRICE INDEX FLUCTUATIONS**

The provisions of this section shall apply only to the following contract items:

ITEM CODE	ITEM
390131	HOT MIX ASPHALT
390138	RUBBERIZED HOT MIX ASPHALT (OPEN GRADED)

The compensation payable for asphalt binder used in hot mix asphalt will be increased or decreased in conformance with the provisions of this section for asphalt binder price fluctuations exceeding 10 percent (Iu/Ib is greater than 1.10 or less than 0.90) which occur during performance of the work.

The adjustment in compensation will be determined in conformance with the following formulae when the item of hot mix asphalt is included in a monthly estimate:

- A. Total monthly adjustment = AQ
- B. For an increase in asphalt binder price index exceeding 10 percent:

$$A = 0.90 (1.1023) (Iu/Ib - 1.10) Ib$$

- C. For a decrease in asphalt binder price index exceeding 10 percent:

$$A = 0.90 (1.1023) (Iu/Ib - 0.90) Ib$$

- D. Where:

A = Adjustment in dollars per tonne of asphalt binder used to produce hot mix asphalt rounded to the nearest \$0.01.

Iu = The California Statewide Paving Asphalt Price Index which is in effect on the first business day of the month within the pay period in which the quantity subject to adjustment was included in the estimate.

Ib = The California Statewide Paving Asphalt Price Index for the month in which the bid opening for the project occurred.

Q = Quantity in tonnes of asphalt binder that was used in producing the quantity of hot mix asphalt shown under "This Estimate" on the monthly estimate using the amount of asphalt binder determined by the Engineer.

The adjustment in compensation will also be subject to the following:

- A. The compensation adjustments provided herein will be shown separately on payment estimates. The Contractor shall be liable to the State for decreased compensation adjustments and the Department may deduct the amount thereof from moneys due or that may become due the Contractor.
- B. Compensation adjustments made under this section will be taken into account in making adjustments in conformance with the provisions in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications.
- C. In the event of an overrun of contract time, adjustment in compensation for asphalt binder included in estimates during the overrun period will be determined using the California Statewide Paving Asphalt Price Index in effect on the first business day of the month within the pay period in which the overrun began.



The California Statewide Paving Asphalt Price Index is determined each month on the first business day of the month by the Department using the median of posted prices in effect as posted by Chevron, ExxonMobil, and Union 76 for the Buena Vista, Huntington Beach, and Midway Sunset fields.

In the event that the companies discontinue posting their prices for a field, the Department will determine an index from the remaining posted prices. The Department reserves the right to include in the index determination the posted prices of additional fields.

The California Statewide Paving Asphalt Price Index is available on the Division of Engineering Services website at:

[http://www.dot.ca.gov/hq/esc/oe/asphalt\\_index/astable.html](http://www.dot.ca.gov/hq/esc/oe/asphalt_index/astable.html)

### **5-1.37 AREAS FOR CONTRACTOR'S USE**

Attention is directed to the provisions in Section 7-1.19, "Rights in Land and Improvements," of the Standard Specifications and these special provisions.

The highway or County right of way shall be used only for purposes that are necessary to perform the required work. The Contractor shall not occupy the right of way, or allow others to occupy the right of way, for purposes which are not necessary to perform the required work.

No area is available within the contract limits for the exclusive use of the Contractor. However, temporary storage of equipment and materials on State or County property may be arranged with the Engineer, subject to the prior demands of State or County maintenance forces and to other contract requirements. Use of the Contractor's work areas and other State-owned or County-owned property shall be at the Contractor's own risk, and the State or County shall not be held liable for damage to or loss of materials or equipment located within such areas.

Two areas are available for the use by the Contractor. The areas available are located at 6880 Perks Court (APN# 327-130-20) and at 7141 Helmrich Lane (APN# 325-180-14) as shown on SC-1 and SC-2. Only those portions of the parcels shown in the plans are available to the Contractor. These areas shall not be used as a plant site. Use of the Contractor's work areas and other County-owned property shall be at the Contractor's own risk, and the State and County shall not be held liable for damage to or loss of materials or equipment located within these areas. Residence trailers will not be allowed within the County or State right of way, except that one trailer will be allowed on the 6880 Perks Court Parcel for yard security purposes.

The Contractor shall maintain a paved access on Perks Court from its connection to Missouri Flat Road to the two parcels at the east end (APN # 327-130-18, and APN #327-130-19) at all times. Contractor may either maintain the existing access, or construct new access as necessary to accommodate Contract work and Contractor's staging of work and as approved by the Engineer. Contractor shall construct new access at such time as permanent improvements make maintenance of the existing access alignment impractical. The access shall be maintained/constructed to a minimum standard of 5.5 meters wide with 300mm shoulder and a minimum structural section of 75mm of HMA over 150mm of Class 2 Aggregate Base.

Full compensation for maintaining/constructing the paved access on Perks Court shall be considered as included in the various items of work required to maintain the road and no separate payment will be made therefor.

The Contractor shall be aware that residential buildings located on APN 327-130-18 and APN 327-130-19 will be occupied by others, and full access must be maintained at all times.

The County has entered into an Agreement with the owners of APN 325-180-14 for a temporary construction easement (TCE) that allows the Contractor to use Parcels 1, 2, and 3 as shown on Sheet SC-2 of the Plans for access and use Parcel 2 for staging and storage of equipment and vehicles. As part of the Agreement with the owners the Contractor will be required to make the following modifications to the three parcels:

Parcel 1 -improve the existing gravel roadway a distance of 183 m and a minimum of 5.5 meters wide and with 300mm shoulders with a minimum of 150mm of Class 2 Aggregate base;

Parcel 2 -improve the existing dirt area approximately 2211 m<sup>2</sup> with base and gravel to support heavy equipment;

Parcel 3 -improve the existing dirt roadway approximately 433 m long and a minimum of 3.7 m wide and with 300mm shoulder with a minimum of 150mm of Class 2 Aggregate base.

The modifications shall be maintained to withstand the additional use of the construction-related traffic throughout the project duration. Prior to final completion of the project, the Contractor shall repair Parcels 1 and 3 roadways to their originally improved conditions, and shall return Parcel 2 to its pre-construction condition.

The contract lump sum price paid for construction on the various parcel numbers listed in the Proposal Pay Items and Bid Price Schedule shall include full compensation for furnishing all labor, materials, tools, equipment,

and incidentals for doing all of the work involved in constructing the improvements to Parcels 1, 2, and 3 including clearing and grubbing, grading, excavation, aggregate base, maintaining the improvements to withstand the additional construction-related traffic throughout the duration of the project, and restoring Parcels 1 and 3 to their originally improved condition as specified in the Standard Specifications and these special provisions.

The contract price paid per square meter for restoration of Parcel # 2 shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all of the work involved in restoring Parcel 2 to its pre-construction condition, including removal and disposal of aggregate base, grading, placement of topsoil and installation of erosion control type D and fiber rolls as specified in the Standard Specifications and these special provisions.

The Contractor shall remove equipment, materials, and rubbish from the work areas and other State-owned or County-owned property which the Contractor occupies. The Contractor shall leave the areas in a presentable condition in conformance with the provisions in Section 4-1.02, "Final Cleaning Up," of the Standard Specifications.

The Contractor shall secure, at the Contractor's own expense, areas required for plant sites, storage of equipment or materials or for other purposes, if sufficient area is not available to the Contractor within the contract limits.

The TCEs secured by the County allow the County or its agents, employees, and contractors the right of ingress and egress as may be reasonably necessary for construction purposes, inclusive of repairs, replacements, and removals as may be from time to time required as well as for other purposes incidental to construction of the project, including any staging, stockpiling, and parking of construction vehicles or equipment.

The Contractor shall be responsible for protecting or replacing any landscape features and facilities adjacent to County right-of-way, Temporary Construction Easement areas and adjacent properties affected by the work unless otherwise specified in the contract documents or by the Engineer. Full compensation for conforming to these requirements will be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

Attention is directed to the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications and these special provisions.

Before the Contractor makes use of any property owner's land where the Department has not made previous arrangements with the owner for the use of said land, the Contractor shall supply to the County a fully executed "Agreement" form. The "Agreement" form shall be a Department supplied form, available upon request.

### 5-1.38 PAYMENTS

Attention is directed to Sections 9-1.06, "Partial Payments," and 9-1.07, "Payment After Acceptance," of the Standard Specifications and these special provisions.

For the purpose of making partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications, the amount set forth for the contract items of work hereinafter listed shall be deemed to be the maximum value of the contract item of work which will be recognized for progress payment purposes:

A. Clearing and Grubbing	\$30,000
B. Bridge Removal (Portion)	\$80,000
C. Progress Schedule (Critical Path Method)	\$ 9,000

After acceptance of the contract pursuant to the provisions in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, the amount, if any, payable for a contract item of work in excess of the maximum value for progress payment purposes hereinabove listed for the item, will be included for payment in the first estimate made after acceptance of the contract.

In determining the partial payments to be made to the Contractor, only the following listed materials will be considered for inclusion in the payment as materials furnished but not incorporated in the work:

- A. Rock Tiedown Anchor
- B. Joint Seal
- C. Bar Reinforcing Steel
- D. Furnish Structural Steel (Bridge)
- E. Furnish Sign Structure (Truss)
- F. Reinforced Concrete Pipe and appurtenances
- G. Corrugated Steel Pipe and appurtenances

- H. Corrugated Steel Pipe Downdrain and appurtenances
- I. Precast Concrete Pipe Inlet
- J. Miscellaneous Iron and Steel
- K. Miscellaneous Metal (Bridge)
- L. Miscellaneous Metal (Catwalk)
- M. Bridge Deck Drainage System
- N. Chain Link Fence (Type CL-1.8)
- O. Metal Beam Guard Railing and appurtenances
- P. Access Barrier
- Q. Tubular Bicycle Handrailing
- R. Cable Railing
- S. Transition Railing (Type WB)
- T. Alternative In-Line Terminal System
- U. Alternative Flared Terminal System
- V. Pavement Markers (Retroreflective)
- W. Lighting Fixtures
- X. Luminaires
- Y. Signal Heads and Lighting Standards

### 5-1.39 SUPPLEMENTAL PROJECT INFORMATION

Supplemental project information attached to the project plans are:

1. Log of Test Borings

Permits included in Appendix B of these special provisions are:

1. California Department of Fish and Game Agreement
2. U.S. Army Corp of Engineers Nationwide Permit
3. California Regional Water Quality Control Board, Central Valley Region Section 401 Water Quality Certification.
4. Caltrans Encroachment Permit
5. Underground Classification

By appending these permits, they are hereby made a part of and are incorporated into this contract.

Supplemental project information included in the Information Handout are:

1. Foundation Investigation Weber Creek Bridge (Widen)
2. Foundation Investigation Missouri Flat Road Overcrossing (Replace)
3. Geotech Design and Materials Report
4. Bridge Design Hydraulic Study
4. Finalized Weber Reservoir Operation Plan Dated February 2003
6. Subsurface Investigation Report (US 50/Missouri Flat Road Interchange Bike Path)
7. Applicable Revised Standard Plans and New Standard Plans

Supplemental project information available from the County are:

1. Cross Sections

The Informational Handout and cross sections will be provided to the Contractor as .pdf files on the DOT's website: [www.edcgov.us/DOT/bids.html](http://www.edcgov.us/DOT/bids.html). Requests for cross sections in dgn format (six files of approx. size: 10MB each) may be made by sending the signed Electronic Usage Acknowledgement Form, included in Attachment B of this document, to Janel Gifford at [Janel.Gifford@edcgov.us](mailto:Janel.Gifford@edcgov.us) or by fax to (530) 295-2655. Once the signed Electronic Usage Acknowledgement Form is received, the County will forward the files in accordance with the method requested on the Electronic Usage Acknowledgement Form.

Bridge as-built drawings are available.

**5-1.40 SOUND CONTROL REQUIREMENTS**

Sound control shall conform to the provisions in Section 7-1.01I, "Sound Control Requirements," of the Standard Specifications and these special provisions.

**Sound Level Criteria**

The maximum allowable noise exposure shall be as specified in the following tables for work within the community types and land use designations as follows:

The work is located in a Community Region with Higher-Density Residential and Commercial and Public Facilities.

The Engineer may approve work that produces noise levels above the specified limits.

<b>MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN COMMUNITY REGIONS AND ADOPTED PLAN AREAS—CONSTRUCTION NOISE</b>			
<b>Land Use Designation</b> <sup>1</sup>	<b>Time Period</b>	<b>Noise Level (dB)</b>	
		<b>L<sub>eq</sub></b>	<b>L<sub>max</sub></b>
Higher-Density Residential (MFR, HDR, MDR)	7 pm–10 pm	50	65
	10 pm–7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 pm–7 am	65	75
Industrial (I)	Any Time	80	90
<b>Note:</b>			
<sup>1</sup> Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.			

The noise level requirement shall apply to the equipment on the job or related to the job measured at the affected building facade, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the Contractor. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel.

As directed by the Engineer, the Contractor shall implement appropriate additional noise mitigation measures, including but not limited to changing the location of stationary construction equipment, shutting off idling equipment, rescheduling contraction activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources such that noise from construction does not exceed the limits specified above. If the existing background noise levels exceed the values above, then the limit for construction noise will be 5 db greater than the levels specified above.

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

**5-1.41 NIGHT TIME LIGHTING REQUIREMENTS**

**Nighttime operations**

If nighttime operations are proposed by the Contractor, the following requirements shall apply:

1. Lighting shall be directed only onto the immediate area under construction,
2. Floodlights on light towers shall be angled no more than 45 degrees,
3. Floodlights on light towers shall be raised not more than 6 m (20 feet) above grade when adjacent to a residence.
4. Light shields shall be used to reflect lighting towards the work areas and away from traffic and residences.

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

#### **5-1.42 NOXIOUS WEEDS**

All off-road construction equipment shall be cleaned of noxious weed sources (mud and vegetation) before the entry into the project area, as well as after entering potentially infested areas and before moving on to another area, to help ensure that noxious weeds are not introduced into the project area. The Contractor shall employ whatever cleaning methods (typically the use of a high pressure water hose, or steam cleaning) are necessary to ensure that the equipment is free of noxious weeds. Equipment shall be considered free of soils, seeds, and other such debris when a visible inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not required. Equipment washing stations shall be placed in areas that afford easy containment and monitoring and that do not drain into sensitive (riparian, wetlands and Stream Environment Zones) areas. The aforementioned noxious weed-free conditions shall also apply to entering and leaving any staging areas. Whenever possible staging areas shall be in weed free areas.

Full compensation for conforming to the requirements in this section shall be considered as included in the prices for the various contract items of work and no additional compensation will be allowed therefor.

#### **5-1.43 WATER CONSERVATION**

Attention is directed to the various sections of the Standard Specifications and these special provisions which require the use of water for the construction of this project. Attention is directed to Section 7, "Legal Relations and Responsibility," of the Standard Specifications with regards to the Contractor's responsibilities for public convenience, public safety, preservation of property, indemnification, and insurance.

Nothing in this section "Water Conservation" shall relieve the Contractor from furnishing an adequate supply of water required for the proper construction of this project in conformance with the provisions in the Standard Specifications or these special provisions or relieve the Contractor from the legal responsibilities defined in Section 7 of the Standard Specifications.

The Contractor shall, whenever possible and not in conflict with the above requirements, minimize the use of water during construction of the project. Watering equipment shall be kept in good working order; water leaks shall be repaired promptly; and washing of equipment, except when necessary for safety or for the protection of equipment, shall be discouraged.

The Contractor is advised to contact local water supply agencies in the area as to the availability of water sources for the Project work and mitigation. Temporary local water conservation measures may affect the supply of water during this project and it is the Contractor responsibility to plan for such impacts and meet the requirements of the contract documents and full compensation for planning and supplying water to conform to the requirements of the plans and contract documents under such conditions shall be considered as included in the prices for the various contract items of work and no additional compensation will be allowed therefor.

The Contractor is advised to contact El Dorado Irrigation District (EID) for availability of water and conditions set in place for their potential water conservation periods and measures:

El Dorado Irrigation District  
2890 Mosquito Road  
Placerville, CA 95667

#### **5-1.44 RELATIONS WITH CALIFORNIA DEPARTMENT OF FISH AND GAME**

A portion of this project is located within the jurisdiction of the California Department of Fish and Game. An agreement regarding a stream or lake has been entered into by the Department of Transportation and the Department of Fish and Game. The Contractor shall be fully informed of the requirements of this agreement as well as rules, regulations, and conditions that may govern the Contractor's operations in these areas and shall conduct the work accordingly. The Contractor shall pay particular attention to Items 8, 10, 11, 12, 13, 14, 15 and 19 of the agreement.

Copies of the agreement are included in Appendix B of these special provisions.

The Contractor shall notify the Department of Transportation within two weeks of beginning work within the stream zone of Weber Creek.

It is unlawful for any person to divert, obstruct or change the natural flow of the bed, channel or bank of a stream, river or lake without first notifying the Department of Fish and Game, unless the project or activity is noticed and constructed in conformance with conditions imposed under Fish and Game Code Section 1602.

Attention is directed to Sections 7-1.01, "Laws to be Observed," 7-1.01G, "Water Pollution," and 7-1.12, "Indemnification and Insurance," of the Standard Specifications and "Temporary Creek Diversion System" of these special provisions.

Modifications to the agreement between the Department of Transportation and the Department of Fish and Game which are proposed by the Contractor shall be submitted in writing to the Engineer for transmittal to the Department of Fish and Game for their consideration.

When the Contractor is notified by the Engineer that a modification to the agreement is under consideration, no work shall be performed which is inconsistent with the original agreement or proposed modification until the Departments take action on the proposed modifications. Compensation for delay will be determined in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The provisions of this section shall be made a part of every subcontract executed pursuant to this contract.

Modifications to any agreement between the Department of Transportation and the Department of Fish and Game will be fully binding on the Contractor. The provisions of this section shall be made a part of every subcontract executed pursuant to this contract.

#### **5-1.45 RELATIONS WITH U.S. ARMY CORPS OF ENGINEERS**

A portion of this project is located within the jurisdiction of the U.S. Army Corps of Engineers. A U.S. Army Corps of Engineers Nationwide Permit No. 14 has been issued covering work performed under this contract. The Contractor shall be fully informed of the requirements of this permit as well as rules, regulations, and conditions that may govern the Contractor's operations in these areas and shall conduct the work accordingly. The Contractor shall pay particular attention to Items 2, 4 and the General Conditions of the permit.

Copies of the permit are included in Appendix B of these special provisions.

Attention is directed to Sections 7-1.01, "Laws to be Observed," 7-1.01G, "Water Pollution," and 7-1.12, "Indemnification and Insurance," of the Standard Specifications and "Temporary Creek Diversion System" of these special provisions.

Modifications to the permit between the Department of Transportation and the U.S. Army Corps of Engineers which are proposed by the Contractor shall be submitted in writing to the Engineer for transmittal to the U.S. Army Corps of Engineers for their consideration.

When the Contractor is notified by the Engineer that a modification to the permit is under consideration, no work shall be performed which is inconsistent with the original permit or proposed modification until the Departments take action on the proposed modifications. Compensation for delay will be determined in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The provisions of this section shall be made a part of every subcontract executed pursuant to this contract.

Modifications to any permit between the Department of Transportation and the U.S. Army Corps of Engineers will be fully binding on the Contractor. The provisions of this section shall be made a part of every subcontract executed pursuant to this contract.

#### **5-1.46 BIRD PROTECTION**

##### **GENERAL**

This work includes protecting migratory and nongame birds, their occupied nests, and their eggs. Nesting or attempted nesting by migratory and nongame birds is anticipated to occur but is not limited to February 15 through August 15.

##### **QUALITY ASSURANCE**

###### **Regulatory requirements**

The Federal Migratory Bird Treaty Act (16 USC §703-711.), 50 CFR 10, and Fish & Game Code §3503, §3513, and §3800, protect migratory and nongame birds, their occupied nests, and their eggs.

The Federal Endangered Species Act of 1973 (16 USC §1531, §1543) and California Endangered Species Act (Fish & Game Code §2050-§2115.5) prohibit the take of listed species and protect occupied and unoccupied nests of threatened and endangered bird species.

The Bald Eagle Protection Act (16 USC §668) prohibits the destruction of bald and golden eagles occupied and unoccupied nests.

Permits are included in included in Appendix "B". Attention is directed to Item 4 of Agreement Regarding Proposed Stream Alteration.

## **CONSTRUCTION**

When migratory or nongame bird nests are discovered which may be adversely affected by construction activity, or when a bird is found injured or killed as a result of construction activity, immediately stop work within 15 meters of the nest or bird and notify the Engineer. Work must not resume until the Engineer provides written notification that work may resume at that location.

When ordered by the Engineer, use exclusion devices, nesting prevention measures or remove and dispose of partially constructed and unoccupied nests of migratory or nongame birds on a regular basis to prevent their occupation.

Nest removal activities must not result in depositing into or allowing materials to enter waters of this state.

## **MEASUREMENT AND PAYMENT**

Exclusion devices, nesting prevention measures and nest removal that are ordered by the Engineer will be paid for as extra work as specified in Section 4-1.03D, "Extra Work," of the Standard Specifications.

A delay to the controlling operation due to migratory or nongame birds or their nests will be considered a temporary suspension of work under Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. Adjustments will be made for delays that the Engineer determines are not due to the Contractor's failure to perform the provision of the contract in the same manner as for suspensions due to unsuitable weather in Section 8-1.05.

### **5-1.47 MATERIAL SITES**

Local material sites used by the Contractor shall be graded so that, at the time of final inspection of the contract, the sites will drain and will blend in with the surrounding terrain.

### **5-1.48 ENVIRONMENTALLY SENSITIVE AREA**

An environmentally sensitive area (ESA) shall consist of an area within and near the limits of construction where access is prohibited or limited for the preservation of archeological site or existing vegetation, or protection of biological habitat as shown on the plans. The Engineer will determine the exact location of the boundaries of the ESA. No work shall be conducted within the ESA.

Attention is directed to Section 7—1.01 "Laws to be Observed," and Section 7—1.04 "Permits and Licenses," of the Standard Specifications regarding State and Federal regulations, permits, or agreements which pertain to an ESA.

Prior to beginning work, the boundaries of the ESA shall be clearly delineated by the placement of temporary fence (Type ESA).

The Contractor's attention is directed to the areas designated "Environmentally Sensitive Areas" and to State and Federal regulations that may pertain to such areas. These areas are protected and no entry by the Contractor for any purpose will be allowed unless specifically authorized in writing by the County.

The Contractor shall give his employees and subcontractors written notice to ensure that all forces are aware that vehicle access, storage or transport of materials or equipment, or other project related activities are prohibited within the boundaries of ESA unless the Contractor receives written approval from the Engineer.

The Contractor shall mitigate damage or impacts to the ESA caused by the Contractor's operations, at the Contractor's expense. If the Engineer determines mitigation work will be performed by others, or if mitigation fees are assessed the Department, deductions from moneys due or to become due the Contractor will be made for the mitigation costs.

The County will conduct an initial environmental awareness training for construction crews prior to project commencement. The education program will include a brief review of the special-status species that could potentially occur in the project areas (including their life history, habitat requirements, pictures of the species legal status, and protection under the ESA of 1972 (16 USC 1536)), since a portion of the project is in an area in which they may occur. The program will also cover noxious weed abatement requirements and the restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on special-status species during construction. The Contractor will be responsible for ensuring that crew members adhere to the guidelines and restrictions. The Contractor shall provide all personnel new to the project with the awareness training information as

they are brought on the job during the construction period. Restrictions and guidelines that must be followed by construction personnel are as follows:

1. Project-related vehicles will observe the posted speed limit on hard-surfaced road and 10 miles per hour speed limit on unpaved road during travel in the project area.
2. Project-related vehicles and construction equipment will restrict off-road travel to the designated construction area.
3. Night time construction adjacent to Weber Creek will be minimized.
4. All food-related trash will be disposed of in closed containers and removed from the project area at least once a week during the construction period. Construction personnel will not feed or otherwise attract wildlife to the project areas.
5. No pets or firearms will be allowed in the project area.
6. No rodenticides or herbicides will be applied in the project area during construction activities.
7. To prevent possible resource damage for hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside of designated staging areas.
8. Any worker who inadvertently injures or kills a special-status species or finds one dead, injured, or entrapped, will immediately report the incident to the biological monitor. The monitor will immediately notify the County, who will provide verbal notification to the United States Fish and Wildlife Service (USFWS) Endangered Species Office in Sacramento, California, and to the local Department of Fish and Game (DFG) warden or biologist within 3 working days. The County will follow up with written notification to USFWS and DFG within 5 working days.

The cost of attendance at the initial environmental awareness training, subsequent training of new employees entering the job after the initial environmental awareness training, cooperation with County and County staff performing environmental monitoring, compliance with restrictions and guidelines listed in this section, and in all project conditions, permits and agreements, not otherwise paid for under separate provision, shall be considered as included in various items of work and no additional compensation shall be made therefor.

A Biological Monitor will be on-site during construction activities. In the event that a yellow-legged frog or northwestern pond turtle becomes trapped during construction activities within the creek, activities will cease until the Biological Monitor is contacted and the frog or turtle is relocated upstream from the construction area and an exclusionary fencing can be installed to prevent the movement of the frog or turtle back into the construction area. If delay occurs for this reason, the delay shall be considered Right-of-Way delay and addressed accordingly.

The cost of the Contractor's compliance with Environmentally Sensitive Area requirements shall be considered as included in various items of work and no additional compensation shall be made therefore.

#### **5-1.49 STATE OF CALIFORNIA ENCROACHMENT PERMIT**

Portions of this project are located within the jurisdiction of the State of California. El Dorado County has obtained an Encroachment Permit from Caltrans, a copy of which is included in Appendix B of these Special Provisions. Prior to start of work within the State of California's right-of-way or work affecting the State of California facilities, the Contractor will be required to obtain an Encroachment Permit at the following State of California Transportation office:

CALTRANS, DISTRICT 3  
PERMIT ENGINEER  
703 B Street  
P.O. Box 911  
Marysville, CA 95901  
(530) 741-4403

No fee will apply.

Full compensation for conforming to the provisions in this section and the requirements in the permit, and the Caltrans Encroachment permit obtained by the County, shall be considered as included in the contract prices paid for the various item or work and no additional compensation will be allowed therefore.

Attention is directed to 7-1.02 of the Special Provisions which requires evidence of insurance coverage in accordance with the Special Provisions delivered to the Caltrans before the issuance of an encroachment permit.



### **5-1.50 EL DORADO COUNTY ENCROACHMENT PERMIT**

Portions of this project are located within the jurisdiction of the County of El Dorado. Prior to start of work within the County of El Dorado's right-of-way or work affecting the County of El Dorado facilities, the Contractor will be required to obtain an Encroachment Permit at the following County of El Dorado office:

COUNTY OF EL DORADO  
2850 Fairlane Court  
Placerville, CA 95667  
(530) 621-5355

No fee will apply.

Full compensation for conforming to the provisions in this section and the requirements in the permit, including the cost of the permit, shall be considered as included in the contract prices paid for the various item or work and no additional compensation will be allowed therefore.

Attention is directed to 7-1.02 of the Special Provisions which requires evidence of insurance coverage in accordance with the Special Provisions delivered to the County before the issuance of an encroachment permit.

### **5-1.51 TUNNEL SAFETY ORDERS**

The work to be performed at the following locations has been classified "Potentially Gassy with Special Conditions" by the State Division of Occupational Safety and Health under Section 8422 of the Tunnel Safety Orders of the California Code of Regulations. The Department of Transportation has obtained Underground Certifications (UC) as follows:

1. The 1524-mm diameter drilled shaft located on the shoulder of the eastbound Route 50 approximately 400 meters northeast of the intersection of Route 50 and Missouri Flat Road, UC# C098-017-09T.
2. The 1524-mm diameter drilled shaft located on the shoulder of the eastbound Route 50 approximately 460 meters northeast of the intersection of Route 50 and Missouri Flat Road, UC# C099-017-09T.
3. The 1524-mm diameter drilled shaft located on the shoulder of the eastbound Route 50 approximately 830 meters northeast of the intersection of Route 50 and Missouri Flat Road, UC# C100-017-09T.
4. The 1524-mm diameter drilled shaft located on the shoulder of the eastbound Route 50 approximately 1150 meters northeast of the intersection of Route 50 and Missouri Flat Road, UC# C101-017-09T.
5. The six 2150- mm wide by 4350-mm long bridge piers located at Weber Creek and US Route 50 approximately 530 meters northeast of the intersection of US Route 50 and Missouri Flat Road, UC# C117-017-09T.

Copies of the Underground Certifications are included in Appendix B of these special provisions.

The Contractor's attention is directed to Section 7-1.06, "Safety and Health Provisions," of the Standard Specifications. A change to the work as a direct result of the Contractor's planned operations that would cause work activities to fall under the requirements of the Tunnel Safety Orders, and that has not been shown on the plans or specified in these special provisions shall be reason for suspension of the work. The Contractor shall notify the Engineer not less than 20 days prior to worker exposure to a facility meeting the definition of a tunnel or shaft as described in Sections 8403 or 8405 of the Tunnel Safety Orders. The Department will obtain additional location classifications as may be necessary to allow the work to proceed.

The Contractor shall prominently post a notice of the classification and any special orders, rules, special conditions, or regulations at the tunnel work site, and all personnel shall be informed of the classification.

At least 7 days prior to beginning work covered by these provisions, the Contractor shall submit the name of the person designated as the on-site Safety Representative to the Engineer along with proof of certification by the Division of Occupational Safety and Health as having met the requirements of Section 8406 of the Tunnel Safety Orders of the California Code of Regulations.

### **5-1.52 COPYRIGHTS, TRADEMARKS, AND PATENTS**

This project is funded in part with CIWMB funds. To the extent the Contractor shall have the legal right to do so, Contractor shall assign to the CIWMB any and all rights, title, and interests to any copyrightable material or trademarkable material created or developed in whole or in part as a result of this funding, but which originated from previously copyrighted or trademarked material. With respect to all other copyrightable and trademarkable materials, the CIWMB shall retain any and all rights, title and interests to any copyrightable material or trademarked material created or developed in whole or in any part as a result of this funding. These rights, both assigned and retained, shall include the right to register for copyright and trademark of such materials. The Contractor is

responsible for obtaining any necessary licenses, permissions, releases, or authorizations to use text, images or other materials owned, copyrighted, or trademarked by third parties and for assigning such licenses, permissions, releases, or authorizations to use text, images or other materials owned, copyrighted, or trademarked by third parties and for assigning such licenses, permissions, releases, or authorizations to the CIWMB pursuant to this section. Contractor shall provide copies of any licenses, permissions, releases, or authorizations obtained pursuant to the use of text, images, or other materials owned, copyrighted, or trademarked by third parties to the County for transmittal to the CIWMB Grant Manager.

The CIWMB hereby grants to the Contractor a royalty-free, non-exclusive, non-transferable world-wide license to reproduce, translate, and distribute copies of the copyrightable materials produced pursuant to this funding, for non-profit, non-commercial purposes, and to have or permit others to do so on the Contractor's behalf. This license is limited to copyrightable materials produced pursuant to this funding and does not extend to any materials capable of being trademarked. The following shall appear on all intellectual property used by the Contractor pursuant to this license, solely for the purpose of protecting CIWMB's intellectual property rights therein: "© {year of creation} by the California Integrated Waste Management Board (CIWMB). Used pursuant to license granted by CIWMB. All rights reserved. This publication, or parts thereof, may not be reproduced without permission."

Contractor assigns to CIWMB all rights, title, and interest in and to each invention or discovery that may be capable of being patented, that is conceived of or first actually reduced to practice with the use of any grant funds. Such assignment shall include assignment of any patents registered with the United States Patent and Trademark Office. Contractor further agrees to cooperate with and assist County in the preparation of any patent application for CIWMB.

**SECTION 6. (BLANK)**

**SECTION 7. CONTRACTOR'S INSURANCE**

**7-1.01 GENERAL INSURANCE REQUIREMENTS**

The Contractor shall provide proof of a policy of insurance satisfactory to the El Dorado County Risk Management Division and documentation evidencing that the Contractor maintains insurance that meets the following requirements:

1. Full Workers' Compensation and Employers' Liability Insurance covering all employees of the Contractor as required by law in the State of California.
2. Commercial General Liability (CGL) Insurance and Umbrella or Excess Liability Insurance covering all operations by or on behalf of the Contractor providing insurance for bodily injury liability and property damage liability for the following limits and including coverage for: Premises, operations, and mobile equipment; personal injury, products and completed operations; broad form property damage including completed operations; explosion, collapse, and underground hazards; blanket contractual, and independent contractors liability. The limits of liability shall be at least the amounts shown in the following table:

Total Bid	For Each Occurrence <sup>1</sup>	Aggregate for Products/Completed Operation	General Aggregate <sup>2</sup>	Umbrella or Excess Liability <sup>3</sup>
≤ \$1,000,000	\$1,000,000	\$2,000,000	\$2,000,000	\$5,000,000
> \$1,000,000				
≤ \$5,000,000	\$1,000,000	\$2,000,000	\$2,000,000	\$10,000,000
> \$5,000,000	\$2,000,000	\$2,000,000	\$4,000,000	\$15,000,000

≤ \$25,000,000				
> \$25,000,000	\$2,000,000	\$2,000,000	\$4,000,000	\$25,000,000

1. Combined single limit for bodily injury and property damage.
2. This limit shall apply separately to the Contractor's work under this contract.
3. The umbrella or excess policy shall contain a clause stating that it takes effect (drops down) in the event the primary limits are impaired or exhausted.

3. Automobile Liability Insurance of not less than One Million Dollars (\$1,000,000) is required in the event motor vehicles are used by the Contractor in performance of the Contract.

4. In the event Contractor is a licensed professional and is performing professional services under this Contract, Professional Liability Insurance is required with a limit of liability of not less than One Million Dollars (\$1,000,000).

### 7-1.02 PROOF OF INSURANCE REQUIREMENTS

Contractor shall furnish proof of coverage satisfactory to the El Dorado County Risk Management Division as evidence that the insurance required herein is being maintained. The insurance will be issued by an insurance company acceptable to the Risk Management Division, or be provided through partial or total self-insurance likewise acceptable to the Risk Management Division. All insurance with an insurance company shall be with an insurance company with a rating from A.M. Best Financial Strength Rating of A- or better and a Financial Size Category of VII or better. Self-insurance programs and self-insured retentions in insurance policies are subject to separate annual review and approval by the County and the State of California.

If the Contractor uses a self-insurance program or self-insured retention, the Contractor shall provide the County and the State of California with the same protection from liability and defense of suits as would be afforded by first-dollar insurance. Execution of the Contract is the Contractor's acknowledgement that the Contractor will be bound by all laws as if the Contractor were an insurer as defined under Insurance Code Section 23 and that the self-insurance program or self-insured retention shall operate as insurance as defined under Insurance Code Section 22.

The Contractor shall provide its General Liability Insurance under Commercial General Liability policy form No. CG0001 as published by the Insurance Services Office (ISO) or under a policy form at least as broad as policy form No. CG0001.

1. The County of El Dorado, its officers, officials, employees, and volunteers and the State of California, its officers, directors, agents (excluding agents who are design professionals), and employees shall be named as additional insured under the general liability and excess liability policies with respect to liability arising out of or connected with work or operations performed by or on behalf of the Contractor under this Contract. Coverage for such additional insured does not extend to liability:
  - a) Arising from any defective or substandard condition of the roadway which existed at or before the time the Contractor started work, unless such condition has been changed by the work or scope of the work requires the Contractor to maintain existing roadway facilities and the claim arises from the Contractor's failure to maintain;
  - b) For claims occurring after the work is completed and accepted unless these claims are directly related to alleged acts or omissions of the Contractor that occurred during the course of the work; or
  - c) To the extent prohibited by Insurance Code Section 11580.04
2. Proof that the County and the State are named additional insureds shall be made as follows: by providing to the County's Risk Management Division and separately to the State, with a certified copy, or other acceptable evidence, of an endorsement to Contractor's insurance policy naming the County and the State of California additional insureds. Additional insured coverage for the County and the State of California shall be provided by a policy provision or by an endorsement providing coverage at least as broad as Additional Insured (Form B)

endorsement form CG 2010, as published by the Insurance Services Office (ISO), or other form designated by the County or State of California. This form shall be delivered by Contractor to the County, and separately to the State, before issuance of the respective County's and State's Encroachment Permit to the Contractor.

3. In the event Contractor cannot provide an occurrence policy, Contractor shall provide insurance covering claims made as a result of performance of this Contract for not less than three (3) years following completion of performance of this Contract.
4. Any deductibles or self-insured retentions must be declared to and approved by the County. At the option of the County, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the County, its officers, officials, employees and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.
5. Contractor shall require each of its subcontractors to procure and maintain commercial general liability insurance, umbrella or excess liability insurance, workers' compensation insurance and automobile liability insurance of the types and in the amounts specified above, or shall insure the activities of its subcontractors in its own policy in like amounts. For each subcontractor, the "Total Bid" in the Table above shall be interpreted as the total amount of work subcontracted to the subcontractor. Contractor shall also require each of its subcontractors to name Contractor and the County of El Dorado and any other additional insured listed above as additional insureds. The Contractor shall not require certified Small Business subcontractors to carry Liability Insurance that exceeds the limits in the table above. Notwithstanding the limits specified herein, at the option of the Contractor, the liability insurance limits for certified Small Business subcontractors of any tier may be less than those limits specified in the table. For Small Business subcontracts, "Total Bid" shall be interpreted as the amount of subcontracted work to a certified Small Business.

#### **7-1.03 INSURANCE NOTIFICATION REQUIREMENTS**

1. Contractor agrees no cancellation or material change in any policy shall become effective except upon thirty (30) days prior written notice to the County of El Dorado Project Manager at the office of the Department of Transportation, 2850 Fair Lane Court, Placerville, CA 95667.
2. Contractor agrees that the insurance required herein shall be in effect at all times during the term of this Contract. In the event said insurance coverage expires at any time or times during the term of this Contract, Contractor shall immediately provide a new certificate of insurance as evidence of the required insurance coverage. In the event Contractor fails to keep in effect at all times insurance coverage as herein provided, County may, in addition to any other remedies it may have, terminate this Contract upon the occurrence of such event. New certificates of insurance are subject to the approval of the Risk Management Division.

#### **7-1.04 ADDITIONAL STANDARDS**

Certificates shall meet such additional standards as may be determined by the Department either independently or in consultation with the Risk Management Division, as essential for protection of the County.

Contractor shall maintain completed operations coverage with a carrier acceptable to the County and State of California through the expiration of the patent deficiency in construction statute of repose set forth in Code of Civil Procedure Section 337.1.

#### **7-1.05 COMMENCEMENT OF PERFORMANCE**

Contractor shall not commence performance of this Contract unless and until compliance with each and every requirement of the insurance provisions is achieved.

#### **7-1.06 MATERIAL BREACH**

Failure of Contractor to maintain the insurance required herein, or to comply with any of the requirements of the insurance provisions, shall constitute a material breach of the entire Contract.

#### **7-1.07 REPORTING PROVISIONS**

Any failure to comply with the reporting provisions of the policies shall not affect coverage provided to the County, its officers, officials, employees or volunteers.

#### **7-1.08 PRIMARY COVERAGE**

The Contractor's insurance coverage shall be primary insurance as respects the County, its officers, officials, employees and volunteers and the State of California. Any insurance or self-insurance maintained by the County, its officers, officials, employees, volunteers or State of California, shall be in excess of the Contractor's insurance and shall not contribute with it.

#### **7-1.09 PREMIUM PAYMENTS**

The insurance companies shall have no recourse against the County of El Dorado its officers, agents, employees or any of them for payment of any premiums or assessments under any policy issued by any insurance company.

#### **7-1.10 CONTRACTOR'S OBLIGATIONS**

Contractor's indemnity and other obligations shall not be limited by the insurance required herein and shall survive the expiration of this Contract.

#### **7-1.11 GOVERNING PRECEDENCE**

To the extent that this Section 7, "Contractor's Insurance," is inconsistent with 7-1.12, "Indemnification and Insurance," of the Standard Specifications, this Section shall govern; otherwise each and every provision of such Section 7-1.12 shall be applicable to this Contract.

### **SECTION 8. MATERIALS**

#### **SECTION 8-1. MISCELLANEOUS**

##### **8-1.01 SUBSTITUTION OF NON-METRIC MATERIALS AND PRODUCTS**

Only materials and products conforming to the requirements of the specifications shall be incorporated in the work. When metric materials and products are not available, and when approved by the Engineer, and at no cost to the State, materials and products in the United States Standard Measures which are of equal quality and of the required properties and characteristics for the purpose intended, may be substituted for the equivalent metric materials and products, subject to the following provisions:

- A. Materials and products shown on the plans or in the special provisions as being equivalent may be substituted for the metric materials and products specified or detailed on the plans.
- B. Before other non-metric materials and products will be considered for use, the Contractor shall furnish, at the Contractor's expense, evidence satisfactory to the Engineer that the materials and products proposed for use are equal to or better than the materials and products specified or detailed on the plans. The burden of proof as to the quality and suitability of substitutions shall be upon the Contractor and the Contractor shall furnish necessary information as required by the Engineer. The Engineer will be the sole judge as to the quality and suitability of the substituted materials and products and the Engineer's decision will be final.
- C. When the Contractor elects to substitute non-metric materials and products, including materials and products shown on the plans or in the special provisions as being equivalent, the list of sources of material specified in Section 6-1.01, "Source of Supply and Quality of Materials," of the Standard Specification shall include a list of substitutions to be made and contract items involved. In addition, for a change in design or details, the Contractor shall submit plans and working drawings in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The plans and working drawings shall be submitted at least 7 days before the Contractor intends to begin the work involved.

Unless otherwise specified, the following substitutions of materials and products will be allowed:

SUBSTITUTION TABLE FOR PLAIN WIRE REINFORCEMENT

ASTM Designation: A 82

METRIC SIZE SHOWN ON THE PLANS mm <sup>2</sup>	SIZE TO BE SUBSTITUTED inch <sup>2</sup> x 100
MW9	W1.4
MW10	W1.6
MW13	W2.0
MW15	W2.3
MW19	W2.9
MW20	W3.1
MW22	W3.5
MW25	W3.9, except W3.5 in piles only
MW26	W4.0
MW30	W4.7
MW32	W5.0
MW35	W5.4
MW40	W6.2
MW45	W6.5
MW50	W7.8
MW55	W8.5, except W8.0 in piles only
MW60	W9.3
MW70	W10.9, except W11.0 in piles only
MW80	W12.4
MW90	W14.0
MW100	W15.5

SUBSTITUTION TABLE FOR BAR REINFORCEMENT

METRIC BAR DESIGNATION NUMBER <sup>1</sup> SHOWN ON THE PLANS	BAR DESIGNATION NUMBER <sup>2</sup> TO BE SUBSTITUTED
10	3
13	4
16	5
19	6
22	7
25	8
29	9
32	10
36	11
43	14
57	18

<sup>1</sup>Bar designation numbers approximate the number of millimeters of the nominal diameter of the bars.

<sup>2</sup>Bar numbers are based on the number of eighths of an inch included in the nominal diameter of the bars.

No adjustment will be required in spacing or total number of reinforcing bars due to a difference in minimum yield strength between metric and non-metric bars.

SUBSTITUTION TABLE FOR SIZES OF:

(1) STEEL FASTENERS FOR GENERAL APPLICATIONS (ASTM Designation: A 307 or AASHTO Designation: M 314, Grade 36 or 55), and

(2) HIGH STRENGTH STEEL FASTENERS (ASTM Designation: A 325 or A 449)

METRIC SIZE SHOWN ON THE PLANS mm	SIZE TO BE SUBSTITUTED inch
6 or 6.35	1/4
8 or 7.94	5/16
10 or 9.52	3/8
11 or 11.11	7/16
13, 12.70, or M12	1/2
14 or 14.29	9/16
16, 15.88, or M16	5/8
19, 19.05, or M20	3/4
22, 22.22, or M22	7/8
24, 25, 25.40, or M24	1
29, 28.58, or M27	1-1/8
32, 31.75, or M30	1-1/4
35 or 34.93	1-3/8
38, 38.10, or M36	1-1/2
44 or 44.45	1-3/4
51 or 50.80	2
57 or 57.15	2-1/4
64 or 63.50	2-1/2
70 or 69.85	2-3/4
76 or 76.20	3
83 or 82.55	3-1/4
89 or 88.90	3-1/2
95 or 95.25	3-3/4
102 or 101.60	4

**SUBSTITUTION TABLE FOR NOMINAL THICKNESS OF SHEET METAL**

UNCOATED HOT AND COLD ROLLED SHEETS		HOT-DIPPED ZINC COATED SHEETS (GALVANIZED)	
METRIC THICKNESS SHOWN ON THE PLANS mm	GAGE TO BE SUBSTITUTED inch	METRIC THICKNESS SHOWN ON THE PLANS mm	GAGE TO BE SUBSTITUTED inch
7.94	0.3125	4.270	0.1681
6.07	0.2391	3.891	0.1532
5.69	0.2242	3.510	0.1382
5.31	0.2092	3.132	0.1233
4.94	0.1943	2.753	0.1084
4.55	0.1793	2.372	0.0934
4.18	0.1644	1.994	0.0785
3.80	0.1495	1.803	0.0710
3.42	0.1345	1.613	0.0635
3.04	0.1196	1.461	0.0575
2.66	0.1046	1.311	0.0516
2.28	0.0897	1.158	0.0456
1.90	0.0747	1.006 or 1.016	0.0396
1.71	0.0673	0.930	0.0366
1.52	0.0598	0.853	0.0336
1.37	0.0538	0.777	0.0306
1.21	0.0478	0.701	0.0276
1.06	0.0418	0.627	0.0247
0.91	0.0359	0.551	0.0217
0.84	0.0329	0.513	0.0202
0.76	0.0299	0.475	0.0187
0.68	0.0269	-----	-----
0.61	0.0239	-----	-----
0.53	0.0209	-----	-----
0.45	0.0179	-----	-----
0.42	0.0164	-----	-----
0.38	0.0149	-----	-----



**SUBSTITUTION TABLE FOR WIRE**

METRIC THICKNESS SHOWN ON THE PLANS mm	WIRE THICKNESS TO BE SUBSTITUTED inch	GAGE NO.
6.20	0.244	3
5.72	0.225	4
5.26	0.207	5
4.88	0.192	6
4.50	0.177	7
4.11	0.162	8
3.76	0.148	9
3.43	0.135	10
3.05	0.120	11
2.69	0.106	12
2.34	0.092	13
2.03	0.080	14
1.83	0.072	15
1.57	0.062	16
1.37	0.054	17
1.22	0.048	18
1.04	0.041	19
0.89	0.035	20

**SUBSTITUTION TABLE FOR PIPE PILES**

METRIC SIZE SHOWN ON THE PLANS mm x mm	SIZE TO BE SUBSTITUTED inch x inch
PP 360 x 4.55	NPS 14 x 0.179
PP 360 x 6.35	NPS 14 x 0.250
PP 360 x 9.53	NPS 14 x 0.375
PP 360 x 11.12	NPS 14 x 0.438
PP 406 x 12.70	NPS 16 x 0.500
PP 460 x T	NPS 18 x T"
PP 508 x T	NPS 20 x T"
PP 559 x T	NPS 22 x T"
PP 610 x T	NPS 24 x T"
PP 660 x T	NPS 26 x T"
PP 711 x T	NPS 28 x T"
PP 762 x T	NPS 30 x T"
PP 813 x T	NPS 32 x T"
PP 864 x T	NPS 34 x T"
PP 914 x T	NPS 36 x T"
PP 965 x T	NPS 38 x T"
PP 1016 x T	NPS 40 x T"
PP 1067 x T	NPS 42 x T"
PP 1118 x T	NPS 44 x T"
PP 1219 x T	NPS 48 x T"
PP 1524 x T	NPS 60 x T"

The thickness in millimeters (T) represents an exact conversion of the thickness in inches (T").

**SUBSTITUTION TABLE FOR CIDH CONCRETE PILING**

METRIC SIZE SHOWN ON THE PLANS	ACTUAL AUGER SIZE TO BE SUBSTITUTED inches
350 mm	14
400 mm	16
450 mm	18
600 mm	24
750 mm	30
900 mm	36
1.0 m	42
1.2 m	48
1.5 m	60
1.8 m	72
2.1 m	84
2.4 m	96
2.7 m	108
3.0 m	120
3.3 m	132
3.6 m	144
4.0 m	156

**SUBSTITUTION TABLE FOR STRUCTURAL TIMBER AND LUMBER**

METRIC MINIMUM DRESSED DRY, SHOWN ON THE PLANS mm x mm	METRIC MINIMUM DRESSED GREEN, SHOWN ON THE PLANS mm x mm	NOMINAL SIZE TO BE SUBSTITUTED inch x inch
19x89	20x90	1x4
38x89	40x90	2x4
64x89	65x90	3x4
89x89	90x90	4x4
140x140	143x143	6x6
140x184	143x190	6x8
184x184	190x190	8x8
235x235	241x241	10x10
286x286	292x292	12x12

**SUBSTITUTION TABLE FOR NAILS AND SPIKES**

METRIC COMMON NAIL, SHOWN ON THE PLANS  Length, mm Diameter, mm	METRIC BOX NAIL, SHOWN ON THE PLANS  Length, mm Diameter, mm	METRIC SPIKE, SHOWN ON THE PLANS Length, mm Diameter, mm	SIZE TO BE SUBSTITUTED Penny-weight
50.80 2.87	50.80 2.51	—————	6d
63.50 3.33	63.50 2.87	—————	8d
76.20 3.76	76.20 3.25	76.20 4.88	10d
82.55 3.76	82.55 3.25	82.55 4.88	12d
88.90 4.11	88.90 3.43	88.90 5.26	16d
101.60 4.88	101.60 3.76	101.60 5.72	20d
114.30 5.26	114.30 3.76	114.30 6.20	30d
127.00 5.72	127.00 4.11	127.00 6.68	40d
—————	—————	139.70 7.19	50d
—————	—————	152.40 7.19	60d

SUBSTITUTION TABLE FOR IRRIGATION  
COMPONENTS

METRIC WATER METERS, TRUCK LOADING STANDPIPES, VALVES, BACKFLOW PREVENTERS, FLOW SENSORS, WYE STRAINERS, FILTER ASSEMBLY UNITS, PIPE SUPPLY LINES, AND PIPE IRRIGATION SUPPLY LINES SHOWN ON THE PLANS DIAMETER NOMINAL (DN) mm	NOMINAL SIZE TO BE SUBSTITUTED inch
15	1/2
20	3/4
25	1
32	1-1/4
40	1-1/2
50	2
65	2-1/2
75	3
100	4
150	6
200	8
250	10
300	12
350	14
400	16

Unless otherwise specified, substitutions of United States Standard Measures standard structural shapes corresponding to the metric designations shown on the plans and in conformance with the requirements in ASTM Designation: A 6/A 6M, Annex 2, will be allowed.

**8-1.02 PREQUALIFIED AND TESTED SIGNING AND DELINEATION MATERIALS**

The Department maintains the following list of Prequalified and Tested Signing and Delineation Materials. The Engineer shall not be precluded from sampling and testing products on the list of Prequalified and Tested Signing and Delineation Materials.

The manufacturer of products on the list of Prequalified and Tested Signing and Delineation Materials shall furnish the Engineer a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each type of traffic product supplied.

For those categories of materials included on the list of Prequalified and Tested Signing and Delineation Materials, only those products shown within the listing may be used in the work. Other categories of products, not included on the list of Prequalified and Tested Signing and Delineation Materials, may be used in the work provided they conform to the requirements of the Standard Specifications.

Materials and products may be added to the list of Prequalified and Tested Signing and Delineation Materials if the manufacturer submits a New Product Information Form to the New Product Coordinator at the Transportation Laboratory. Upon a Departmental request for samples, sufficient samples shall be submitted to permit performance of required tests. Approval of materials or products will depend upon compliance with the specifications and tests the Department may elect to perform.

## **PAVEMENT MARKERS, PERMANENT TYPE**

### **Retroreflective With Abrasion Resistant Surface (ARS)**

1. Apex, Model 921AR (100 mm x 100 mm)
2. Ennis Paint, Models C88 (100 mm x 100 mm), 911 (100 mm x 100 mm) and C80FH
3. Ray-O-Lite, Model "AA" ARS (100 mm x 100 mm) and ARC Round Shoulder (100 mm x 100 mm)
4. 3M Series 290 (89 mm x 100 mm)
5. 3M Series 290 PSA
6. Glowlite, Inc Model 988AR (100 mm x 100 mm)

### **Retroreflective With Abrasion Resistant Surface (ARS)**

(for recessed applications only)

1. Ennis Paint, Model 948 (58 mm x 119 mm)
  2. Ennis Paint, Model 944SB (51 mm x 100 mm)\*
  3. Ray-O-Lite, Model 2002 (51 mm x 117 mm)
  4. Ray-O-Lite, Model 2004 ARS (51 mm x 100 mm)\*
- \*For use only in 114 mm wide (older) recessed slots

### **Non-Reflective, 100-mm Round**

1. Apex Universal (Ceramic)
2. Apex Universal, Models 929 (ABS) and 929PP (Polypropylene)
3. Glowlite, Inc. (Ceramic) and PP (Polypropylene)
4. Hi-Way Safety, Inc., Models P20-2000W and 2001Y (ABS)
5. Interstate Sales, "Diamond Back" (Polypropylene)
6. Novabrite Models Cdot (White) Cdot-y (Yellow), Ceramic
7. Novabrite Models Pdot-w (White) Pdot-y (Yellow), Polypropylene
8. Three D Traffic Works TD10000 (ABS), TD10500 (Polypropylene)

## **PAVEMENT MARKERS, TEMPORARY TYPE**

### **Temporary Markers For Long Term Day/Night Use (180 days or less)**

1. Vega Molded Products "Temporary Road Marker" (75 mm x 100 mm)

### **Temporary Markers For Short Term Day/Night Use (14 days or less)**

(For seal coat or chip seal applications, clear protective covers are required)

1. Apex Universal, Model 932
2. Filtrona Extrusion, Models T.O.M., T.R.P.M., and "HH" (High Heat)
3. Hi-Way Safety, Inc., Model 1280/1281
4. Glowlite, Inc., Model 932

## **STRIPING AND PAVEMENT MARKING MATERIAL**

### **Permanent Traffic Striping and Pavement Marking Tape**

1. Advanced Traffic Marking, Series 300 and 400
2. Brite-Line, Series 1000
3. Brite-Line, "DeltaLine XRP"
4. Swarco Industries, "Director 35" (For transverse application only)
5. Swarco Industries, "Director 60"
6. 3M, "Stamark" Series 380 and 5730
7. 3M, "Stamark" Series 420 (For transverse application only)

### **Temporary (Removable) Striping and Pavement Marking Tape (180 days or less)**

1. Advanced Traffic Marking, Series 200
2. Brite-Line, Series 100
3. Garlock Rubber Technologies, Series 2000
4. P.B. Laminations, Aztec, Grade 102
5. Swarco Industries, "Director-2"

6. Trelleborg Industries, R140 Series
7. 3M Series 620 "CR", and Series A750
8. 3M Series A145, Removable Black Line Mask  
(Black Tape: for use only on Hot mix asphalt surfaces)
9. Advanced Traffic Marking Black "Hide-A-Line"  
(Black Tape: for use only on Hot mix asphalt surfaces)
10. Brite-Line "BTR" Black Removable Tape  
(Black Tape: for use only on Hot mix asphalt surfaces)
11. Trelleborg Industries, RB-140  
(Black Tape: for use only on Hot mix asphalt surfaces)

**Preformed Thermoplastic (Heated in place)**

1. Flint Trading Inc., "Hot Tape"
2. Flint Trading Inc., "Premark Plus"
3. Ennis Paint Inc., "Flametape"

**Ceramic Surfacing Laminate, 150 mm x 150 mm**

1. Highway Ceramics, Inc.

**CLASS 1 DELINEATORS**

**One Piece Driveable Flexible Type, 1700-mm**

1. Filtrona Extrusion, "Flexi-Guide Models 400 and 566"
2. Carsonite, Curve-Flex CFRM-400
3. Carsonite, Roadmarker CRM-375
4. FlexStake, Model 654 TM
5. GreenLine Model CGD1-66

**Special Use Type, 1700-mm**

1. Filtrona Extrusion, Model FG 560 (with 450-mm U-Channel base)
2. Carsonite, "Survivor" (with 450-mm U-Channel base)
3. Carsonite, Roadmarker CRM-375 (with 450-mm U-Channel base)
4. FlexStake, Model 604
5. GreenLine Model CGD (with 450-mm U-Channel base)
6. Impact Recovery Model D36, with #105 Driveable Base
7. Safe-Hit with 200-mm pavement anchor (SH248-GP1)
8. Safe-Hit with 380-mm soil anchor (SH248-GP2) and with 450-mm soil anchor (SH248-GP3)

**Surface Mount Type, 1200-mm**

1. Bent Manufacturing Company, Masterflex Model MF-180EX-48
2. Carsonite, "Channelizer"
3. FlexStake, Models 704, 754 TM, and EB4
4. Impact Recovery Model D48, with #101 Fixed (Surface-Mount) Base
5. Three D Traffic Works "Channelflex" ID No. 522248W

**CHANNELIZERS**

**Surface Mount Type, 900-mm**

1. Bent Manufacturing Company, Masterflex Models MF-360-36 (Round) and MF-180-36 (Flat)
2. Filtrona Extrusion, Flexi-Guide Models FG300PE, FG300UR, and FG300EFX
3. Carsonite, "Super Duck" (Round SDR-336)
4. Carsonite, Model SDCF03601MB "Channelizer"
5. FlexStake, Models 703, 753 TM, and EB3
6. GreenLine, Model SMD-36
7. Hi-way Safety, Inc. "Channel Guide Channelizer" Model CGC36
8. Impact Recovery Model D36, with #101 Fixed (Surface-Mount) Base

9. Safe-Hit, Guide Post, Model SH236SMA and Dura-Post, Model SHL36SMA
10. Three D Traffic Works "Boomerang" 5200 Series

#### **Lane Separation System**

1. Filtrona Extrusion, "Flexi-Guide (FG) 300 Curb System"
2. Qwick Kurb, "Klemmfix Guide System"
3. Dura-Curb System
4. Tuff Curb

#### **CONICAL DELINEATORS, 1070-mm**

(For 700-mm Traffic Cones, see Standard Specifications)

1. Bent Manufacturing Company "T-Top"
2. Plastic Safety Systems "Navigator-1070 mm"
3. Traffix Devices "Grabber"
4. Three D Traffic Works "Ringtop" TD7000, ID No. 742143
5. Three D Traffic Works, TD7500
6. Work Area Protection Corp. C-42

#### **OBJECT MARKERS**

##### **Type "K", 450-mm**

1. Filtrona Extrusion, Model FG318PE
2. Carsonite, Model SMD 615
3. FlexStake, Model 701 KM
4. Safe-Hit, Model SH718SMA

##### **Type "K-4" / "Q" Object Markers, 600-mm**

1. Bent Manufacturing "Masterflex" Model MF-360-24
2. Filtrona Extrusion, Model FG324PE
3. Carsonite, "Channelizer"
4. FlexStake, Model 701KM
5. Safe-Hit, Models SH824SMA\_WA and SH824GP3\_WA
6. Three D Traffic Works ID No. 531702W and TD 5200
7. Three D Traffic Works ID No. 520896W

#### **CONCRETE BARRIER MARKERS AND TEMPORARY RAILING (TYPE K) REFLECTORS**

##### **Impactable Type**

1. ARTUK, "FB"
2. Filtrona Extrusion, Models PCBM-12 and PCBM-T12
3. Duraflex Corp., "Flexx 2020" and "Electriflexx"
4. Hi-Way Safety, Inc., Model GMKRM100
5. Plastic Safety Systems "BAM" Models OM-BARR and OM-BWAR
6. Three D Traffic Works "Roadguide" Model TD 9304

##### **Non-Impactable Type**

1. ARTUK, JD Series
2. Plastic Safety Systems "BAM" Models OM-BITARW and OM-BITARA
3. Vega Molded Products, Models GBM and JD
4. Plastic Vacuum Forming, "Cap-It C400"

#### **METAL BEAM GUARD RAIL POST MARKERS**

(For use to the left of traffic)

1. Filtrona Extrusion, "Mini" (75 mm x 254 mm)
2. Creative Building Products, "Dura-Bull, Model 11201"

3. Duraflex Corp., "Railrider"
4. Plastic Vacuum Forming, "Cap-It C300"

#### **CONCRETE BARRIER DELINEATORS, 400-mm**

(For use to the right of traffic)

1. Filtrona Extrusion, Model PCBM T-16
2. Safe-Hit, Model SH216RBM

#### **CONCRETE BARRIER-MOUNTED MINI-DRUM (260 mm x 360 mm x 570 mm)**

1. Stinson Equipment Company "SaddleMarker"

#### **GUARD RAILING DELINEATOR**

(Place top of reflective element at 1200 mm above plane of roadway)

##### **Wood Post Type, 686-mm**

1. Filtrona Extrusion, FG 427 and FG 527
2. Carsonite, Model 427
3. FlexStake, Model 102 GR
4. GreenLine GRD 27
5. Safe-Hit, Model SH227GRD
6. Three D Traffic Works "Guardflex" TD9100
7. New Directions Mfg, NDM27

##### **Steel Post Type**

1. Carsonite, Model CFGR-327

#### **RETROREFLECTIVE SHEETING**

##### **Channelizers, Barrier Markers, and Delineators**

1. Avery Dennison T-6500 Series (For rigid substrate devices only)
2. Avery Dennison WR-7100 Series
3. Nippon Carbide Industries, Flexible Ultralite Grade (ULG) II
4. Reflexite, PC-1000 Metalized Polycarbonate
5. Reflexite, AC-1000 Acrylic
6. Reflexite, AP-1000 Metalized Polyester
7. Reflexite, Conformalight, AR-1000 Abrasion Resistant Coating
8. 3M, High Intensity

##### **Traffic Cones, 100-mm and 150-mm Sleeves**

1. Nippon Carbide Industries, Flexible Ultralite Grade (ULG) II
2. Reflexite, Vinyl, "TR" (Semi-transparent) or "Conformalight"
3. 3M Series 3840
4. Avery Dennison S-9000C

##### **Drums**

1. Avery Dennison WR-6100
2. Nippon Carbide Industries, Flexible Ultralite Grade (ULG) II
3. Reflexite, "Conformalight", "Super High Intensity" or "High Impact Drum Sheeting"
4. 3M Series 3810

##### **Barricades: Type I, Medium-Intensity (Typically Enclosed Lens, Glass-Bead Element)**

1. Nippon Carbide Industries, CN8117
2. Avery Dennison, W 1100 series
3. 3M Series CW 44



**Barricades: Type II, Medium-High-Intensity (Typically Enclosed Lens, Glass-Bead Element)**

1. Avery Dennison, W-2100 Series

**Signs: Type II, Medium-High-Intensity (Typically Enclosed Lens, Glass-Bead Element)**

1. Avery Dennison, T-2500 Series
2. Nippon Carbide Industries, Nikkalite 18000

**Signs: Type III, High-Intensity (Typically Encapsulated Glass-Bead Element)**

1. Avery Dennison, T-5500A and T-6500 Series
2. Nippon Carbide Industries, Nikkalite Brand Ultralite Grade II
3. 3M 3870 and 3930 Series

**Signs: Type IV, High-Intensity (Typically Unmetallized Microprismatic Element)**

1. Avery Dennison, T-6500 Series
2. Nippon Carbide Industries, Crystal Grade, 94000 Series
3. Nippon Carbide Industries, Model No. 94847 Fluorescent Orange
4. 3M Series 3930 and Series 3924S

**Signs: Type VI, Elastomeric (Roll-Up) High-Intensity, without Adhesive**

1. Avery Dennison, WU-6014
2. Novabrite LLC, "Econobrite"
3. Reflexite "Vinyl"
4. Reflexite "SuperBright"
5. Reflexite "Marathon"
6. 3M Series RS20

**Signs: Type VII, Super-High-Intensity (Typically Unmetallized Microprismatic Element)**

1. 3M Series 3924S, Fluorescent Orange
2. 3M LDP Series 3970

**Signs: Type VIII, Super-High-Intensity (Typically Unmetallized Microprismatic Element)**

1. Avery Dennison, T-7500 Series
2. Avery Dennison, T-7511 Fluorescent Yellow
3. Avery Dennison, T-7513 Fluorescent Yellow Green
4. Avery Dennison, W-7514 Fluorescent Orange
5. Nippon Carbide Industries, Nikkalite Crystal Grade Series 92800
6. Nippon Carbide Industries, Nikkalite Crystal Grade Model 92847 Fluorescent Orange

**Signs: Type IX, Very-High-Intensity (Typically Unmetallized Microprismatic Element)**

1. 3M VIP Series 3981 Diamond Grade Fluorescent Yellow
2. 3M VIP Series 3983 Diamond Grade Fluorescent Yellow/Green
3. 3M VIP Series 3990 Diamond Grade
4. Avery Dennison T-9500 Series
5. Avery Dennison, T9513, Fluorescent Yellow Green
6. Avery Dennison, W9514, Fluorescent Orange
7. Avery Dennison, T-9511 Fluorescent Yellow

**SPECIALTY SIGNS**

1. Reflexite "Endurance" Work Zone Sign (with Semi-Rigid Plastic Substrate)

**ALTERNATIVE SIGN SUBSTRATES**

**Fiberglass Reinforced Plastic (FRP) and Expanded Foam PVC**

1. Fiber-Brite (FRP)
2. Sequentia, "Polyplate" (FRP)

3. Inteplast Group "InteCel" (13 mm for Post-Mounted CZ Signs, 1200 mm or less)(PVC)

**Aluminum Composite, Temporary Construction Signs and Permanent Signs up to 1400 mm.**

1. Alcan Composites "Dibond Material, 2 mm"
2. Mitsubishi Chemical America, Alpolic 350

**8-1.03 CALTRANS-FURNISHED MATERIALS**

Attention is directed to Section 6-1.02, "State-Furnished Materials," of the Standard Specifications and these special provisions.

The following materials will be furnished to the Contractor by Caltrans:

- A. Guide sign panels for roadside signs and overhead sign structures (as shown on the plans).
- B. Loop detector sensor units.
- C. Model 2070 controller assembly in type 334 cabinet

Completely wired 2070 controller cabinets, with auxiliary equipment will be furnished to the Contractor at Caltrans Sac Electric Dept. located at 11325 Sanders Drive, Rancho Cordova 95742.

The Contractor shall submit a written request to the Engineer for Caltrans-furnished guide sign panels for roadside signs and overhead sign structures at least 100 days in advance of their intended installation. The number, type and size of the sign panels shall be provided to the Engineer.

Guide sign panels will be furnished to the Contractor at the Marysville Sign Yard located at 1403 Furneaux Road, Olivehurst, CA 95961.

The Contractor shall notify the Engineer not less than one week before sign panels are to be picked up by the Contractor.

The Contractor shall notify the District Engineer not less than 48 hours before Caltrans-furnished material is to be picked up by the Contractor. A full description of the material and the time the material will be picked up shall be provided.

**8-1.04 ENGINEERING FABRICS**

Engineering fabrics shall conform to the provisions in Section 88, "Engineering Fabrics," of the Standard Specifications and these special provisions.

Filter fabric for this project shall be ultraviolet (UV) ray protected.

**SECTION 8-2. CONCRETE**

**8-2.01 PORTLAND CEMENT CONCRETE**

Portland cement concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and these special provisions.

The Department maintains a list of sources of fine and coarse aggregate that have been approved for use with a reduced amount of supplementary cementitious material in the total amount of cementitious material to be used. A source of aggregate will be considered for addition to the approved list if the producer of the aggregate submits to the Transportation Laboratory certified test results from a qualified testing laboratory that verify the aggregate complies with the requirements. Before the testing starts, the aggregate test shall be registered with the Department. A registration number can be obtained by calling (916) 227-7228. The registration number shall be used as the identification for the aggregate sample in correspondence with the Department. Upon request, a split of the tested sample shall be provided to the Department. Approval of aggregate will depend upon compliance with the specifications, based on the certified test results submitted, together with any replicate testing the Department may elect to perform. Approval will expire 3 years from the date the most recent registered and evaluated sample was collected from the aggregate source.

Qualified testing laboratories shall conform to the following requirements:

1. Laboratories performing ASTM Designation: C 1293 shall participate in the Cement and Concrete Reference Laboratory (CCRL) Concrete Proficiency Sample Program and shall have received a score of 3 or better on each test of the previous 2 sets of concrete samples.

2. Laboratories performing ASTM Designation: C 1260 shall participate in the Cement and Concrete Reference Laboratory (CCRL) Pozzolan Proficiency Sample Program and shall have received a score of 3 or better on the shrinkage and soundness tests of the previous 2 sets of pozzolan samples.

Aggregates on the list shall conform to one of the following requirements:

1. When the aggregate is tested in conformance with the requirements in California Test 554 and ASTM Designation: C 1293, the average expansion at one year shall be less than or equal to 0.040 percent; or
2. When the aggregate is tested in conformance with the requirements in California Test 554 and ASTM Designation: C 1260, the average of the expansion at 16 days shall be less than or equal to 0.15 percent.

If the aggregates used in the concrete are on the Department's list, the minimum amount of supplementary cementitious material shall conform to the following:

1. If fly ash or natural pozzolan conforming to the provisions in Section 90-2.01C, "Required Use of Supplementary Cementitious Materials," of the Standard Specifications is used, the minimum amount of supplementary cementitious material shall be 15 percent by mass of the total cementitious material; or
2. If silica fume conforming to the provisions in Section 90-2.01C, "Required Use of Supplementary Cementitious Materials," of the Standard Specifications is used, the minimum amount of supplementary cementitious material shall be 7 percent by mass of the total cementitious material.

The limitation on tricalcium silicate (C<sub>3</sub>S) content in Type II cement specified in Section 90-2.01A, "Cement," of the Standard Specifications shall not apply.

### 8-2.02 CORROSION CONTROL FOR PORTLAND CEMENT CONCRETE

Portland cement concrete for the bridge decks and barrier rails at this location is considered to be in a corrosive environment and shall conform to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and these special provisions.

Concrete in a corrosive environment shall contain not less than 400 kilograms of cementitious material per cubic meter.

Reduction in the cementitious material content specified or ordered, in conformance with the provisions in Section 90-4.05, "Optional Use of Chemical Admixtures," of the Standard Specifications, is not permitted for concrete in a corrosive environment.

Unless otherwise specified, for concrete in a corrosive environment, the amount of portland cement shall be 75 percent by weight, and the amount of supplementary cementitious material shall be 25 percent by weight, of the total amount of cementitious material to be used in the concrete mix.

The supplementary cementitious material for concrete in a corrosive environment shall be either flyash or natural pozzolan. At the option of the Contractor, this concrete may conform to A, B, C, or D below.

- A. 20 percent by weight of either flyash or natural pozzolan, 5 percent by weight of silica fume, and 75 percent by weight of portland cement.
- B. 10 percent by weight of silica fume and 90 percent by weight of portland cement.
- C. 50 percent by weight of ground granulated blast furnace slag, and 50 percent by weight of portland cement.
- D. 10 percent by weight of metakaolin conforming to AASHTO Designation: M 295 Class N and 90 percent by weight of portland cement. Metakaolin shall also conform to the following chemical and physical requirements:

Chemical Requirements	Percent
Silicon Dioxide (SiO <sub>2</sub> ) + Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )	92.0 min.
Calcium Oxide (CaO)	1.0 max
Sulfur Trioxide (SO <sub>3</sub> )	1.0 max.
Loss on ignition	1.2 max.
Available Alkalies (as Na <sub>2</sub> O) equivalent	1.0 max.

Physical Requirements	Percent
Retained No. 325 sieve	2.0 max
Strength Activity Index with portland cement	
7 days	100 (minimum % of control)
28 days	100 (minimum % of control)

Full compensation for conforming to the above requirements shall be considered as included in the contract prices paid for the various contract items of work, and no additional compensation will be allowed therefor.

### 8-2.03 FREEZING CONDITION REQUIREMENTS

The mortar strength of fine aggregate relative to the mortar strength of Ottawa sand shall be a minimum of 100 percent as determined by California Test 515.

Portland cement concrete shall contain not less than 350 kilograms of cementitious material per cubic meter unless a higher cementitious material content is required elsewhere in these special provisions.

An air-entraining admixture conforming to the provisions in Section 90-4, "Admixtures," of the Standard Specifications shall be added to the concrete at the rate required to result in an air content of  $6.0 \pm 1.5$  percent in the freshly mixed concrete, unless a different air content is specified in these special provisions.

## SECTION 8-3. WELDING

### 8-3.01 WELDING

#### GENERAL

Flux cored welding electrodes conforming to the requirements of AWS A5.20 E6XT-4 or E7XT-4 shall not be used to perform welding for this project.

Wherever reference is made to the following AWS welding codes in the Standard Specifications, on the plans, or in these special provisions, the year of adoption for these codes shall be as listed:

AWS Code	Year of Adoption
D1.1	2006
D1.4	2005
D1.5	2002
D1.6	1999

Requirements of the AWS welding codes shall apply unless otherwise specified in the Standard Specifications, on the plans, or in these special provisions. Wherever the abbreviation AWS is used, it shall be equivalent to the abbreviations ANSI/AWS or AASHTO/AWS.

Section 6.1.1.1 of AWS D1.5 is replaced with the following:

Quality Control (QC) shall be the responsibility of the Contractor. As a minimum, the Contractor shall perform inspection and testing of each weld joint prior to welding, during welding, and after welding as specified in this section and as necessary to ensure that materials and workmanship conform to the requirements of the contract documents.

Unless otherwise specified, Sections 6.1.3 through 6.1.4.3 of AWS D1.1, Section 7.1.2 of AWS D1.4, and Sections 6.1.1.2 through 6.1.3.3 of AWS D1.5 are replaced with the following:

The QC Inspector shall be the duly designated person who acts for and on behalf of the Contractor for inspection, testing, and quality related matters for all welding.

Quality Assurance (QA) is the prerogative of the Engineer. The QA Inspector is the duly designated person who acts for and on behalf of the Engineer.

The QC Inspector shall be responsible for quality control acceptance or rejection of materials and workmanship, and shall be currently certified as an AWS Certified Welding Inspector (CWI) in conformance with the requirements in AWS QC1, "Standard for AWS Certification of Welding Inspectors."

The QC Inspector may be assisted by an Assistant QC Inspector provided that this individual is currently certified as an AWS Certified Associate Welding Inspector (CAWI) in conformance with the requirements in

AWS QC1, "Standard for AWS Certification of Welding Inspectors." The Assistant QC Inspector may perform inspection under the direct supervision of the QC Inspector provided the assistant is always within visible and audible range of the QC Inspector. The QC Inspector shall be responsible for signing all reports and for determining if welded materials conform to workmanship and acceptance criteria. The ratio of QC Assistants to QC Inspectors shall not exceed 5 to 1.

When the term "Inspector" is used without further qualification, it shall refer to the QC Inspector.

When any work is welded in conformance with the provisions in Section 75, "Miscellaneous Metal," of the Standard Specifications, not including Section 75-1.035, "Bridge Joint Restrainer Units," of the Standard Specifications, Section 6.1.4 of AWS D1.1 is replaced with the following:

The QC Inspector shall be responsible for quality control acceptance or rejection of materials and workmanship and shall be currently certified as an AWS CWI in conformance with the requirements in AWS QC1, "Standard for AWS Certification of Welding Inspectors," or as a Welding Inspector Specialist (WIS) in conformance with the requirements in AWS B5.2, "Specification for the Qualification of Welding Inspector Specialists and Welding Inspector Assistants."

Section 6.14.6, "Personnel Qualification," of AWS D1.1, Section 7.8, "Personnel Qualification," of AWS D1.4, and Section 6.1.3.4, "Personnel Qualification," of AWS D1.5 are replaced with the following:

Personnel performing nondestructive testing (NDT) shall be qualified and certified in conformance with the requirements of the American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A and the Written Practice of the NDT firm. The Written Practice of the NDT firm shall meet or exceed the guidelines of the ASNT Recommended Practice No. SNT-TC-1A. Individuals who perform NDT, review the results, and prepare the written reports shall be either:

- A. Certified NDT Level II technicians, or;
- B. Level III technicians who hold a current ASNT Level III certificate in that discipline and are authorized and certified to perform the work of Level II technicians.

Section 6.5.4 of AWS D1.5 is replaced with the following:

The QC Inspector shall inspect and approve each joint preparation, assembly practice, welding technique, joint fit-up, and the performance of each welder, welding operator, and tack welder to make certain that the applicable requirements of this code and the approved Welding Procedure Specification (WPS) are met. The QC Inspector shall examine the work to make certain that it meets the requirements of Sections 3 and 6.26. The size and contour of all welds shall be measured using suitable gages. Visual inspection for cracks in welds and base metal, and for other discontinuities shall be aided by strong light, magnifiers, or such other devices as may be helpful. Acceptance criteria different from those specified in this code may be used when approved by the Engineer.

Section 6.6.5, "Nonspecified NDT Other than Visual," of AWS D1.1, Section 7.6.5 of AWS D1.4 and Section 6.6.5 of AWS D1.5 shall not apply.

For any welding, the Engineer may direct the Contractor to perform NDT that is in addition to the visual inspection or NDT specified in the AWS or other specified welding codes, in the Standard Specifications, or in these special provisions. Except as provided for in these special provisions, additional NDT required by the Engineer, and associated repair work, will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications. Prior to release of welded material by the Engineer, if testing by NDT methods other than those originally specified discloses an attempt to defraud or reveals a gross nonconformance, all costs associated with the repair of the deficient area, including NDT of the weld and of the repair, and any delays caused by the repair, shall be at the Contractor's expense. A gross nonconformance is defined as the sum of planar type rejectable indications in more than 20 percent of the tested length.

When less than 100 percent of NDT is specified for any weld, it is expected that the entire length of weld meet the specified acceptance-rejection criteria. Should any welding deficiencies be discovered by additional NDT directed or performed by the Engineer that utilizes the same NDT method as that originally specified, all costs associated with the repair of the deficient area, including NDT of the weld and of the weld repair, and any delays caused by the repair, shall be at the Contractor's expense.

Repair work to correct welding deficiencies discovered by visual inspection directed or performed by the Engineer, and any associated delays or expenses caused to the Contractor by performing these repairs, shall be at the Contractor's expense.

The Engineer shall have the authority to verify the qualifications or certifications of any welder, QC Inspector, or NDT personnel to specified levels by retests or other means approved by the Engineer.

Inspection and approval of all joint preparations, assembly practices, joint fit-ups, welding techniques, and the performance of each welder, welding operator, and tack welder shall be documented by the QC Inspector on a daily basis for each day welding is performed. For each inspection, including fit-up, Welding Procedure Specification (WPS) verification, and final weld inspection, the QC Inspector shall confirm and document compliance with the requirements of the AWS or other specified code criteria and the requirements of these special provisions on all welded joints before welding, during welding, and after the completion of each weld.

In addition to the requirements specified in the applicable code, the period of effectiveness for a welder's or welding operator's qualification shall be a maximum of 3 years for the same weld process, welding position, and weld type. If welding will be performed without gas shielding, then qualification shall also be without gas shielding. Excluding welding of fracture critical members, a valid qualification at the beginning of work on a contract will be acceptable for the entire period of the contract, as long as the welder's or welding operator's work remains satisfactory.

In addition to the requirements of AWS D1.1, welding procedures qualification for work welded in conformance with that code shall conform to the following requirements:

When a nonstandard weld joint is to be made using a combination of WPSs, a single test may be conducted combining the WPSs to be used in production, provided the essential variables, including weld bead placement, of each process are limited to those established in Table 4.5.

In addition to the requirements of AWS D1.5, Section 5.12 or 5.13, welding procedures qualification for work welded in conformance with that code shall conform to the following requirements:

- A. Unless considered prequalified, fillet welds shall be qualified in each position. The fillet weld soundness test shall be conducted using the essential variables of the WPS as established by the Procedure Qualification Record (PQR).
- B. For qualification of joints that do not conform to Figures 2.4 and 2.5 of AWS D1.5, a minimum of two WPS qualification tests are required. The tests shall be conducted using both Figure 5.1 and Figure 5.3. The test conforming to Figure 5.1 shall be conducted in conformance with AWS D1.5, Section 5.12 or 5.13. The test conforming to Figure 5.3 shall be conducted using the welding electrical parameters that were established for the test conducted conforming to Figure 5.1. The ranges of welding electrical parameters established during welding per Figure 5.1 in conformance with AWS D1.5, Section 5.12, shall be further restricted according to the limits in Table 5.3 during welding per Figure 5.3.
- C. Multiple zones within a weld joint may be qualified. The travel speed, amperage, and voltage values that are used for tests conducted per AWS D1.5 Section 5.13 shall be consistent for each pass in a weld joint, and shall in no case vary by more than  $\pm 10$  percent for travel speed,  $\pm 10$  percent for amperage, and  $\pm 7$  percent for voltage as measured from a predetermined target value or average within each weld pass or zone. The travel speed shall in no case vary by more than  $\pm 15$  percent when using submerged arc welding.
- D. For a WPS qualified in conformance with AWS D1.5 Section 5.13, the values to be used for calculating ranges for current and voltage shall be based on the average of all weld passes made in the test. Heat input shall be calculated using the average of current and voltage of all weld passes made in the test for a WPS qualified in conformance with Section 5.12 or 5.13.
- E. Macroetch tests are required for WPS qualification tests, and acceptance shall be per AWS D1.5 Section 5.19.3.
- F. When a nonstandard weld joint is to be made using a combination of WPSs, a test conforming to Figure 5.3 may be conducted combining the WPSs to be used in production, provided the essential variables, including weld bead placement, of each process are limited to those established in Table 5.3.
- G. Prior to preparing mechanical test specimens, the PQR welds shall be inspected by visual and radiographic tests. Backing bar shall be 75 mm in width and shall remain in place during NDT testing. Results of the visual and radiographic tests shall comply with AWS D1.5 Section 6.26.2, excluding Section 6.26.2.2. Test plates that do not comply with both tests shall not be used.

## WELDING QUALITY CONTROL

Welding quality control shall conform to the requirements in the AWS or other specified welding codes, the Standard Specifications, and these special provisions.

Unless otherwise specified, welding quality control shall apply when any work is welded in conformance with the provisions in Section 49, "Piling," Section 52, "Reinforcement," Section 55, "Steel Structures," Section 75-1.03, "Miscellaneous Bridge Metal" with respect to miscellaneous metal (catwalk), or Section 75-1.035, "Bridge Joint Restrainer Units," of the Standard Specifications.

All welding will require inspection by the Engineer. The Contractor shall request inspection at least 3 business days prior to the beginning of welding for locations within California and 5 business days for locations outside of California. The Contractor shall request inspection at:

<http://www.dot.ca.gov/hq/esc/Translab/OSM/smbforms.htm>

Continuous inspection shall be provided when any welding is being performed. Continuous inspection, as a minimum, shall include having a QC Inspector within such close proximity of all welders or welding operators so that inspections by the QC Inspector of each welding operation at each welding location does not lapse for a period exceeding 30 minutes.

When joint weld details that are not prequalified to the details of Section 3 of AWS D1.1 or to the details of Figure 2.4 or 2.5 of AWS D1.5 are proposed for use in the work, the joint details, their intended locations, and the proposed welding parameters and essential variables, shall be approved by the Engineer. The Contractor shall allow the Engineer 15 days to complete the review of the proposed joint detail locations. In the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications. Upon approval of the proposed joint detail locations and qualification of the proposed joint details, welders and welding operators using these details shall perform a qualification test plate using the WPS variables and the joint detail to be used in production. The test plate shall have the maximum thickness to be used in production and a minimum length of 460 mm. The test plate shall be mechanically and radiographically tested. Mechanical and radiographic testing and acceptance criteria shall be as specified in the applicable AWS codes.

The Engineer will witness all qualification tests for WPSs that were not previously approved by the Department. Unless otherwise specified, an approved independent third party will witness the qualification tests for welders or welding operators. The independent third party shall be a current CWI and shall not be an employee of the contractor performing the welding. The Contractor shall allow the Engineer 15 days to review the qualifications and copy of the current certification of the independent third party. In the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications. The Contractor shall notify the Engineer 7 days prior to performing any qualification tests. Witnessing of qualification tests by the Engineer shall not constitute approval of the intended joint locations, welding parameters, or essential variables.

The Contractor shall designate in writing a welding Quality Control Manager (QCM). The QCM shall be responsible directly to the Contractor for the quality of welding, including materials and workmanship, performed by the Contractor and subcontractors.

The QCM shall be the sole individual responsible to the Contractor for submitting, receiving, reviewing, and approving all correspondence, required submittals, and reports to and from the Engineer. The QCM shall be a registered professional engineer or shall be currently certified as a CWI.

Unless the QCM is hired by a subcontractor providing only QC services, the QCM shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project. The QCM may be an employee of the Contractor.

Welding inspection personnel or NDT firms to be used in the work shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project, except for the following conditions:

- A. The work is welded in conformance with AWS D1.5 and is performed at a permanent fabrication or manufacturing facility that is certified under the AISC Quality Certification Program, Category Cbr, Major Steel Bridges and Fracture Critical endorsement F, when applicable.
- B. The work is welded in conformance with AWS D1.1 at a permanent pipe manufacturing or fabrication facility that maintains a QC program that is independent from production.

For welding performed at such facilities, the inspection personnel or NDT firms may be employed or compensated by the facility performing the welding provided the facility maintains a QC program that is independent from production.

Prior to submitting the Welding Quality Control Plan (WQCP) required herein, a prewelding meeting between the Engineer, the Contractor's QCM, and a representative from each entity performing welding or inspection for this project, shall be held to discuss the requirements for the WQCP.

The Contractor shall submit to the Engineer, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, 2 copies of a separate WQCP for each subcontractor or supplier for each item of work for which welding is to be performed.

The Contractor shall allow the Engineer 15 days to review the WQCP submittal after a complete plan has been received. No welding shall be performed until the WQCP is approved in writing by the Engineer. In the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

An amended WQCP or any addendum to the approved WQCP shall be submitted to, and approved in writing by the Engineer, for proposed revisions to the approved WQCP. An amended WQCP or addendum will be required for revisions to the WQCP, including but not limited to a revised WPS; additional welders; changes in NDT firms, QC, or NDT personnel or procedures; or updated systems for tracking and identifying welds. The Engineer shall have 7 days to complete the review of the amended WQCP or addendum. Work affected by the proposed revisions shall not be performed until the amended WQCP or addendum has been approved. In the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

Information regarding the contents, format, and organization of a WQCP, is available at the Transportation Laboratory and at:

<http://www.dot.ca.gov/hq/esc/Translab/OMS/smbresources.htm>

After final approval of the WQCP, amended WQCP, or addendum, the Contractor shall submit 7 copies to the Engineer of the approved documents. A copy of the Engineer approved document shall be available at each location where welding is to be performed.

A daily production log for welding shall be kept for each day that welding is performed. The log shall clearly indicate the locations of all welding. The log shall include the welders' names, amount of welding performed, any problems or deficiencies discovered, and any testing or repair work performed, at each location. The daily report from each QC Inspector shall also be included in the log.

The following items shall be included in a Welding Report that is to be submitted to the Engineer within 15 days following the performance of any welding:

- A. A daily production log.
- B. Reports of all visual weld inspections and NDT.
- C. Radiographs and radiographic reports, and other required NDT reports.
- D. A summary of welding and NDT activities that occurred during the reporting period.
- E. Reports of each application of heat straightening.
- F. A summarized log listing the rejected lengths of weld by welder, position, process, joint configuration, and piece number.
- G. Documentation that the Contractor has evaluated all radiographs and other nondestructive tests and corrected all rejectable deficiencies, and that all repaired welds have been reexamined using the required NDT and found acceptable.



The following information shall be clearly written on the outside of radiographic envelopes: name of the QCM, name of the nondestructive testing firm, name of the radiographer, date, contract number, complete part description, and all included weld numbers, report numbers, and station markers or views, as detailed in the WQCP. In addition, all interleaves shall have clearly written on them the part description and all included weld numbers and station markers or views, as detailed in the WQCP. A maximum of 2 pieces of film shall be used for each interleave.

Reports of all visual inspections and NDT shall be signed by the inspector or technician and submitted daily to the QCM for review and signature prior to submittal to the Engineer. Corresponding names shall be clearly printed or typewritten next to all signatures. Reports of all NDT, whether specified, additional, or informational, performed by the Contractor shall be submitted to the Engineer.

The Engineer will review the Welding Report to determine if the Contractor is in conformance with the WQCP. Except for steel pipe piling, the Engineer shall be allowed 15 days to review the report and respond in writing after the complete Welding Report has been received. Prior to receiving notification from the Engineer of the Contractor's conformance with the WQCP, the Contractor may encase in concrete or cover welds for which the Welding Report has been submitted. However, should the Contractor elect to encase or cover those welds prior to receiving notification from the Engineer, it is expressly understood that the Contractor shall not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection. Should the Contractor elect to wait to encase or cover welds pending notification by the Engineer, and in the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

For steel pipe piling, including bar reinforcement in the piling, the Contractor shall allow the Engineer 2 business days to review the Welding Report and respond in writing after the required items have been received. No field welded steel pipe piling shall be installed, and no reinforcement in the piling shall be encased in concrete until the Engineer has approved the above requirements in writing.

In addition to the requirements in AWS D1.1 and AWS D1.5, second-time excavations of welds or base metal to repair unacceptable discontinuities, regardless of NDT method, and all repairs of cracks require prior approval of the Engineer.

The Engineer shall be notified immediately in writing when welding problems, deficiencies, base metal repairs, or any other type of repairs not submitted in the WQCP are discovered, and also of the proposed repair procedures to correct them. For requests to perform second-time repairs or repairs of cracks, the Contractor shall include an engineering evaluation of the proposed repair. The engineering evaluation, at a minimum, shall address the following:

- A. What is causing each defect?
- B. Why the repair will not degrade the material properties?
- C. What steps are being taken to prevent similar defects from happening again?

The Contractor shall allow the Engineer 7 days to review these procedures. No remedial work shall begin until the repair procedures are approved in writing by the Engineer. In the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The QCM shall sign and furnish to the Engineer, a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each item of work for which welding was performed. The certificate shall state that all of the materials and workmanship incorporated in the work, and all required tests and inspections of this work, have been performed in conformance with the details shown on the plans, the Standard Specifications, and these special provisions.

#### **WELDING FOR OVERHEAD SIGN AND POLE STRUCTURES**

The Contractor shall meet the following requirements for any work welded in conformance with the provisions in Section 56-1, "Overhead Sign Structures," or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications.

Welding inspection personnel or NDT firms to be used in the work shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project, except for when the welding is performed at a permanent fabrication or manufacturing facility which is certified under the AISC Quality Certification Program, Category Sbd, Conventional Steel Building Structures.

#### **Welding Qualification Audit**

Contractors or subcontractors performing welding operations for overhead sign and pole structures shall not deliver materials to the project without having successfully completed the Department's "Manufacturing Qualification Audit for Overhead Sign and Pole Structures," hereinafter referred to as the audit, not more than one year prior to the delivery of the materials. The Engineer will perform the audit. Copies of the audit form, and procedures for requesting and completing the audit, are available at the Transportation Laboratory or at:

<http://www.dot.ca.gov/hq/esc/Translab/OSM/smbresources.htm>

An audit that was approved by the Engineer no more than one year prior to the beginning of work on this contract will be acceptable for the entire period of this contract, provided the Engineer determines the audit was for the same type of work that is to be performed on this contract.

Successful completion of an audit shall not relieve the Contractor of the responsibility for furnishing materials or producing finished work of the quality specified in these special provisions and as shown on the plans.

#### **Welding Report**

For work welded in conformance with the provisions in Section 56-1, "Overhead Sign Structures," or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications, a Welding Report shall be submitted in conformance with the provisions in "Welding Quality Control" of these special provisions.

#### **PAYMENT**

Full compensation for conforming to the requirements of "Welding" shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

### **SECTION 9. DESCRIPTION OF BRIDGE WORK**

The work, in general, consists of widening the existing Weber Creek Bridges (Br. No.'s 25-0005 L/R). Work includes constructing new pier columns, widening the existing seat style abutments, erecting new steel plate girders and bracing, constructing new concrete decking, and replacing existing barrier rails. In addition, the structures will be seismically retrofitted by replacing the rocker bearing systems with elastomeric bearing pads and strengthening the existing piers and abutments. The work also includes constructing Type 1 retaining walls, removal of existing AC overlay, and placing a polyester concrete overlay.

### **SECTION 10. CONSTRUCTION DETAILS**

#### **SECTION 10-1. GENERAL**

##### **10-1.01 ORDER OF WORK**

Order of work shall conform to the provisions in Section 5-1.05, "Order of Work," of the Standard Specifications and these special provisions.

Attention is directed to "Temporary Fence" of these special provisions. Temporary Fence and Gates shown on sheet SC-1 shall be installed and operational prior to Contractor's mobilization of equipment or materials onto

project site or Contractor's Yard area. Temporary Fence shall remain in place, and be maintained as necessary through out the duration of Contractor's activities.

Attention is directed to "Replace Bearing" of these special provisions. Existing rocker bearings and assemblies shall be replaced as the contractor's first order of work and must be complete prior to constructing adjacent widened superstructure bearing seat for each structure widening.

Attention is directed to "Prestressing Concrete" and "Rock Tiedown Anchors" of these special provisions. Existing Piers 4R and 4L footing retrofits shall be constructed after the concrete deck closure pour on each structure has been cured.

Attention is directed to "Maintaining Traffic" of these special provisions. Bridge 25-0005L deck shall be widened first.

Attention is directed to "Closure Requirements and Conditions" of these special provisions regarding submittal and Engineer's approval of a contingency plan prior to applying reversible traffic control with a freeway crossover on US-50.

The Contractor's attention is directed to the "Finalized Weber Reservoir Operation Plan" Dated February 2003. The Contractor shall schedule his operations such that his work does not interfere with the operation plan.

Except as noted herein, the Contractor shall maintain access on Route 50 for permit loads during the work shifts. Permit loads are defined as overweight or oversized vehicles that have an approved permit for traveling this route. The Contractor shall give notice 15 calendar days in advance to the Engineer and the Caltrans Office of Truck Services at (916) 322-1297, when the horizontal clearances are less than 4.88 m or the vertical clearances are less than 5.5 m.

The Contractor shall maintain access on Route 50 for permit loads during work shifts, except as noted below. Prior to raising the bridge (i.e. jacking operations), the Contractor shall give notice 15 calendar days in advance to the Engineer and the Caltrans Office of Truck Services at (916) 322-1297, requesting that permit loads be restricted across the bridge. Only after being informed by the Engineer or Caltrans Office of Truck Services that the permit restriction is in place can the Contractor raise the bridge onto jacks. The Contractor shall schedule his jacking operations such that the bridge is off the jacks and back on its bearing pads with the anchor bolts secured prior to 12:01 a.m. on the first and third Monday of every month. The Contractor shall then provide access to permit loads on Route 50 for a minimum duration of 48 hours between jacking operations.

Work within the creek banks shall be limited to the period of May 1<sup>st</sup> thru October 15<sup>th</sup> or before the onset of the rainy season, whichever occurs first.

Tree removal is limited to August 15<sup>th</sup> to February 15<sup>th</sup>.

Nighttime construction near Weber Creek shall be minimized.

Work on the EB on-ramp shall be completed prior to beginning work on the WB on-ramp, unless approved in writing by the Engineer.

Once work begins on the construction of the new WB on-ramp the existing WB on-ramp shall remain closed and the detour shall be in place.

Attention is directed to "Miscellaneous Concrete Construction" of these special provisions regarding constructing a 600 mm by 600 mm test panel prior to constructing curb ramps with detectable warning surfaces.

Attention is directed to "Environmentally Sensitive Area" and "Temporary Fence (Type ESA)" of these special provisions. Prior to beginning work, the boundaries of the Environmentally Sensitive Areas (ESA) shall be clearly delineated in the field. The boundaries shall be delineated by the installation of temporary fence (Type ESA).

The first order of work shall be to place the order for the electrical equipment. The Engineer shall be furnished a statement from the vendor that the order for the electrical equipment has been received and accepted by the vendor.

The Contractor shall not perform any electrical work above ground until all electrical materials have been received by the Contractor. The Contractor may place underground materials such as conduit, pull boxes, and foundations prior to receiving all electrical materials.

The uppermost layer of new hot mix asphalt (Type A) pavement shall not be placed until all underlying underground work, conduits and loop detectors have been installed.

Prior to commencement of the traffic signal functional test at any location, all items of work related to signal control shall be completed and all roadside signs, pavement delineation, and pavement markings shall be in place at that location.

Attention is directed to "Maintaining Traffic" and "Temporary Pavement Delineation" of these special provisions and to the stage construction, traffic handling and detour sheets of the plans.

Attention is directed to "Progress Schedule (Critical Path Method)" of these special provisions regarding the submittal of a general time-scaled logic diagram at the preconstruction scheduling conference. The diagram shall be

submitted prior to performing any work that may be affected by any proposed deviations to the construction staging of the project.

The work shall be performed in conformance with the stages of construction shown on the plans. Nonconflicting work in subsequent stages may proceed concurrently with work in preceding stages, provided satisfactory progress is maintained in the preceding stages of construction and with the Engineer's approval.

In each stage, after completion of the preceding stage, the removal of existing pavement delineation shall be as required by the planned work and as directed by the Engineer. Pavement delineation removal shall be coordinated with new delineation so that lane lines are provided at all times on traveled ways open to public traffic.

The Contractor shall maintain adequate drainage, as determined by the Engineer, during the stage construction. Full compensation for doing all work involved in the maintaining adequate drainage shall be considered as included in the various items of contract work and no separate payment will be allowed therefore.

Before obliterating any pavement delineation (traffic stripes, pavement markings, and pavement markers) that is to be replaced on the same alignment and location, as determined by the Engineer, the pavement delineation shall be referenced by the Contractor, with a sufficient number of control points to reestablish the alignment and location of the new pavement delineation. The references shall include the limits or changes in striping pattern, including one- and 2-way barrier lines, limit lines, crosswalks and other pavement markings. Full compensation for referencing existing pavement delineation shall be considered as included in the contract prices paid for new pavement delineation and no additional compensation will be allowed therefor.

Prior to applying asphaltic emulsion (paint binder), the Contractor shall cover all manholes, valve and monument covers, grates, or other exposed facilities located within the area of application, using a plastic or oil resistant construction paper secured to the facility being covered by tape or adhesive. The covered facilities shall be referenced by the Contractor, with a sufficient number of control points to relocate the facilities after the upper most layer of pavement has been placed. After completion of the paving operation, all covers shall be removed and disposed of in a manner satisfactory to the Engineer. Full compensation for covering manholes, valve and monument covers, grates, or other exposed facilities, referencing, and removing temporary cover shall be considered as included in the contract price paid per tonne for the various types of hot mix asphalt, and no additional compensation will be allowed therefor.

At the end of each working day if a difference in excess of 0.046-meter exists between the elevation of the existing pavement and the elevation of excavations within 1.5 m left and 2.4 m right of the traveled way that is not separated from public traffic by temporary railing (type K), material shall be placed and compacted against the vertical cuts adjacent to the traveled way. During excavation operations, native material may be used for this purpose; however, once placing of the structural section commences, structural material shall be used. The material shall be placed to the level of the elevation of the top of existing pavement and tapered at a slope of 1:4 (vertical:horizontal) or flatter to the bottom of the excavation. Full compensation for placing the material on a 1:4 slope, regardless of the number of times the material is required, and subsequent removing or reshaping of the material to the lines and grades shown on the plans shall be considered as included in the contract price paid for the materials involved and no additional compensation will be allowed therefor. No payment will be made for material placed in excess of that required for the structural section.

At those locations exposed to public traffic where guard railings or barriers are to be constructed, reconstructed, or removed and replaced, the Contractor shall schedule operations so that at the end of each working day there shall be no post holes open nor shall there be any railing or barrier posts installed without the blocks and rail elements assembled and mounted thereon and terminal sections installed, or temporarily attached, to exposed ends of rail elements. If the anchor portion of the guardrail is removed or altered then the Contractor shall anchor the remaining portion of the guardrail in such a manner that it performs as it would have had the anchor not been removed.

At least 60 days before applying seeds, furnish the Engineer a statement from the vendor that the order for the seed required for this contract has been received and accepted by the vendor. The statement from the vendor must include the names and quantity of seed ordered and the anticipated date of delivery.

The Engineer designates ground locations of erosion control by directing the placing of stakes or other suitable markers before application of erosion control materials as specified under "Erosion Control (Type D)," of these special provisions.

Contractor's attention is directed to contract plans, layout sheets L-4 and L-5, specifically areas labeled, Brown, Hall & Sandefer. For clearing necessary within the above described areas, all trees cleared 4 inches diameter or greater, shall be cut into 16 inch lengths and neatly stacked along the edge of TCE farthest from the highway on the parcel from which they were cleared. All work necessary to comply with this provision shall be considered as included in various items of work, with no additional compensation therefore.

Contractor's attention is directed to contract plans, layout sheet L-4, specifically area labeled Carver/Cohen. Contractor shall schedule work activities (including fence removal and fence replacement) in such a manner, or

make other arrangements as may be necessary, to assure the existing property owner maintains a secure enclosed fence line at all times. All work necessary to comply with this provision shall be considered as included in various items of work, with no additional compensation therefore.

#### **10-1.02 TRENCH AND EXCAVATION SAFETY**

Attention is directed to Sections 5-1.02A, "Excavation Safety Plans", and 7-1.01E, "Trench Safety" of the Standard Specifications and OSHA 29 CFR Part 1926 Construction Industry Regulations and these special provisions.

The Contractor shall provide a safe means of egress in trenches and excavation 5 feet deep and greater by the use of sheeting, shoring, bracing, sloping of the sides of the trench or excavation, or equivalent method.

The Contractor shall submit a detailed plan showing the design of the sheeting, shoring, bracing or equivalent method which the Contractor proposes to use during construction to the Engineer in accordance with Section 5-1.02A of the Standard Specifications, except that this plan shall be submitted for the Engineer's review and acknowledgement within five (5) working days prior to any proposed work requiring protection. No excavation or trenching requiring protection shall commence until the "Shoring and Excavation Plan" is approved by the Engineer.

The contract lump sum price paid for trench and excavation safety shall include full compensation for furnishing all labor, tools, equipment, and materials necessary to install sheeting, shoring and bracing, sloping sides of trenches and excavations 5 feet deep and greater or equivalent method, in addition to preparing the "Shoring and Excavation Plan" as specified above, in accordance with the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. The Engineer has the discretion to reduce payments for this items where the need for trench and excavation protection is indicated on the plans but not required in the field.

#### **10-1.03 WATER POLLUTION CONTROL**

Water pollution control work shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications and these special provisions.

This project lies within the boundaries of the Central Valley (Sacramento) Regional Water Quality Control Board (RWQCB). The County has obtained a 401 Water Quality Certification from RWQCB for this project. The Contractor shall be fully informed of the requirements of this permit as well as rules, regulations, and conditions that may govern the Contractor's operations in these areas and shall conduct the work accordingly. The Contractor shall pay particular attention to Conditions 2, 3, 4, 5, 6, 7 and 8 of the permit.

A copy of the permit is included in Appendix B of these special provisions.

The Contractor shall notify the Department of Transportation within two weeks of beginning work within the stream zone of Weber Creek.

Attention is directed to "Temporary Creek Diversion System" of these special provisions. The allowable turbidity limits shall not be exceeded. The Contractor shall provide the County with a turbidimeter capable of reading between 0 and 1000 NTU with direct digital readout for use during the duration of this project. The meter will become the property of the County at the end of the project. The County will provide the testing to verify that the turbidity limits are not exceeded.

This project is subject to the current Statewide General Permit issued by the SWRCB entitled "Order No. 99-08-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Associated with Construction Activity," which regulates discharges of storm water and non-storm water from construction activities disturbing 0.4-hectare {one acre} or more of soil in a common plan of development and the Caltrans' Permit is entitled: "Order No. 99-06-DWQ, NPDES No. CAS000003, National Pollutant Discharge Elimination System (NPDES) Permit, Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation Properties, Facilities, and Activities." Copies of the Statewide General Permit and the Caltrans' Permit and modifications thereto are available for review from the SWRCB, Storm Water Permit Unit, 1001 "I" Street, P.O. Box 1977, Sacramento, California 95812-1977, Telephone: (916) 341-5254 and may also be obtained from the SWRCB Internet website at: [http://www.waterboards.ca.gov/water\\_issues/programs/stormwater/](http://www.waterboards.ca.gov/water_issues/programs/stormwater/).

The Permits require the preparation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall be prepared in conformance with the requirements of the Permits, the document entitled "Storm Water Management Plan for Western El Dorado County" Updated May 2004 (SWMP) (available from the El Dorado County

Department of Transportation, or from the County website at: <http://www.co.el-dorado.ca.us/emd/solidwaste/storm.html#SWMP>), the Caltrans' "Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual," and the Caltrans' "Construction Site Best Management Practices (BMPs) Manual," including addenda to those permits and manuals issued up to and including the date of advertisement of the project. These manuals are hereinafter referred to, respectively, as the "Storm Water Management Plan for Western El Dorado County", the "Preparation Manual", and the "Construction Site BMPs Manual," and collectively, as the "Manuals." Copies of the "Preparation Manual" and the "Construction Site BMPs Manual" may be obtained from the Department of Transportation, Material Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520, and may also be obtained from the Department's Internet website at: <http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm>.

The Contractor shall know and fully comply with applicable provisions of the Permits and all modifications thereto, the SWMP, and Federal, State, and local regulations and requirements that govern the Contractor's operations and storm water and non-storm water discharges from the project site construction. Attention is directed to Sections 7-1.01, "Laws to be Observed," and 7-1.12, "Indemnification and Insurance," of the Standard Specifications.

The Contractor shall be responsible for penalties assessed or levied on the Contractor or the Department as a result of the Contractor's failure to comply with the provisions in this section "Water Pollution Control" including, but not limited to, compliance with the applicable provisions of the Permits, the SWMP, and Federal, State and local regulations and requirements as set forth therein.

Penalties as used in this section, "Water Pollution Control," shall include fines, penalties and damages, whether proposed, assessed, or levied against the Department or the Contractor, including those levied under the Federal Clean Water Act and the State Porter-Cologne Water Quality Control Act, by governmental agencies or as a result of citizen suits. Penalties shall also include payments made or costs incurred in settlement for alleged violations of the Permits, the SWMP, or applicable laws, regulations, or requirements. Costs incurred could include sums spent instead of penalties, in mitigation or to remediate or correct violations.

#### **RETENTION OF FUNDS**

Notwithstanding any other remedies authorized by law, the Department may retain money due the Contractor under the contract, in an amount determined by the Department, up to and including the entire amount of Penalties proposed, assessed, or levied as a result of the Contractor's violation of the Permits, the SWMP, or Federal or State law, regulations or requirements. Funds may be retained by the Department until final disposition has been made as to the Penalties. The Contractor shall remain liable for the full amount of Penalties until such time as they are finally resolved with the entity seeking the Penalties.

Retention of funds for failure to conform to the provisions in this section, "Water Pollution Control," shall be in addition to the other retention amounts required by the contract. The amounts retained for the Contractor's failure to conform to provisions in this section will be released for payment on the next monthly estimate for partial payment following the date when an approved SWPPP has been implemented and maintained, and when water pollution has been adequately controlled, as determined by the Engineer.

When a regulatory agency identifies a failure to comply with the Permits and modifications thereto, the SWMP, or other Federal, State or local requirements, the Department may retain money due the Contractor, subject to the following:

- A. The Department will give the Contractor thirty (30) days notice of the Department's intention to retain funds from partial payments which may become due to the Contractor prior to acceptance of the contract. Retention of funds from payments made after acceptance of the contract may be made without prior notice to the Contractor.
- B. No retention of additional amounts out of partial payments will be made if the amount to be retained does not exceed the amount being withheld from partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications.
- C. If the Department has retained funds, and it is subsequently determined that the County is not subject to the entire amount of the Costs and Liabilities assessed or proposed in connection with the matter for which the

retention was made, the Department shall be liable for interest on the amount retained for the period of the retention. The interest rate payable shall be six percent (6%) per annum.

During the first estimate period that the Contractor fails to conform to the provisions in this section, "Water Pollution Control," the Department may retain an amount equal to twenty five percent (25%) of the estimated value of the contract work performed.

The Contractor shall notify the Engineer immediately upon request from the regulatory agencies to enter, inspect, sample, monitor, or otherwise access the project site or the Contractor's records pertaining to water pollution control work. The Contractor and the Department shall provide copies of correspondence, notices of violation, enforcement actions or proposed fines by regulatory agencies to the requesting regulatory agency.

#### **STORM WATER POLLUTION PREVENTION PLAN PREPARATION, APPROVAL AND AMENDMENTS**

As part of the water pollution control work, a Storm Water Pollution Prevention Plan (SWPPP) is required for this contract and shall include, at a minimum, all items of work shown on the Erosion Control plans. The SWPPP shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications, the requirements in the SWMP, the requirements of the Permits, and these special provisions. Upon the Engineer's approval of the SWPPP, the SWPPP shall be considered to fulfill the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications for development and submittal of a Water Pollution Control Program.

No work having potential to cause water pollution shall be performed until the SWPPP has been approved by the Engineer. Approval shall not constitute a finding that the SWPPP complies with applicable requirements of the Permits, the SWMP and applicable Federal, State and local laws, regulations, and requirements.

The SWPPP shall generally incorporate the water pollution control practices identified in Section 4.4.5, "Minimum Construction Site Practices" of the Storm Water Management Plan for Western El Dorado County. Implementation and construction of BMPs shall be in accordance with the March 2003 "Caltrans Construction Site Best Management Practices (BMPs) Manual".

SWPPP shall include a spill prevention and countermeasures plan that includes strict on-site handling rules to keep construction and maintenance materials out of drainages and waterways; provides staging and storage areas for equipment, materials, fuels, lubricants, solvents, and other possible contaminants located outside the riparian zone and 100 feet from any surface waters and utilizes sediment fences, certified weed-free hay bales, sandbags and baffles as additional resources to protect waters, ditches and wetlands; and requires removal of vehicles from the riparian zone and 100 feet from any surface water before refueling and lubricating.

The Contractor shall develop a Water Pollution Control Schedule that describes the timing of grading or other work activities that could affect water pollution. The Water Pollution Control Schedule shall be updated by the Contractor to reflect changes in the Contractor's operations that would affect the necessary implementation of water pollution control practices.

Within twenty (20) working days after the approval of the contract, the Contractor shall submit three (3) copies of the draft SWPPP to the Engineer. The Engineer will have ten (10) working days to review the SWPPP. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the SWPPP within ten (10) working days of receipt of the Engineer's comments. The Engineer will have five (5) working days to review the revisions. Upon the Engineer's approval of the SWPPP, four (4) approved copies of the SWPPP, incorporating the required changes, shall be submitted to the Engineer. In order to allow construction activities to proceed, the Engineer may conditionally approve the SWPPP while minor revisions are being completed.

In the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for resulting losses, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The Contractor shall prepare an amendment to the SWPPP when there is a change in construction activities or operations which may affect the discharge of pollutants to surface waters, ground waters, municipal storm drain systems, or when the Contractor's activities or operations violate a condition of the Permits, or when directed by the Engineer. Amendments shall identify additional water pollution control practices or revised operations, including those areas or operations not identified in the initially approved SWPPP. Amendments to the SWPPP shall be prepared and submitted for review and approval within a time approved by the Engineer, but in no case longer than the time specified for the initial submittal and review of the SWPPP. At a minimum, the SWPPP shall be amended annually and submitted to the Engineer twenty five (25) days prior to the rainy season.

**The Contractor shall keep one (1) copy of the approved SWPPP and approved amendments at the Project site.** The SWPPP shall be made available upon request by a representative of the Regional Water Quality Control Board, State Water Resources Control Board, United States Environmental Protection Agency, or the local storm water management agency. Requests by the public shall be directed to the Engineer.

### **SWPPP IMPLEMENTATION**

Unless otherwise specified, upon approval of the SWPPP, the Contractor shall be responsible throughout the duration of the Project for installing, constructing, inspecting, maintaining, removing, and disposing of the water pollution control practices specified in the SWPPP and in the amendments. Unless otherwise directed by the Engineer, the Contractor's responsibility for SWPPP implementation shall continue throughout temporary suspensions of work ordered in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. Requirements for installation, construction, inspection, maintenance, removal, and disposal of water pollution control practices shall conform to the requirements in the SWMP and these special provisions.

If the Contractor or the Engineer identifies a deficiency in the implementation of the approved SWPPP or amendments, the deficiency shall be corrected immediately unless requested by the Contractor and approved by the Engineer in writing, but shall be corrected prior to the onset of precipitation. If the Contractor fails to correct the identified deficiency by the date agreed or prior to the onset of precipitation, the project shall be in nonconformance with this section, "Water Pollution Control." Attention is directed to Section 5-1.01, "Authority of Engineer," of the Standard Specifications, and to "Retention of Funds" of this section for possible nonconformance penalties.

If the Engineer determines that resources sufficient to bring the Contractor into compliance with this section "Water Pollution Control" have not been allocated, the Engineer may redirect any and all of Contractor's resources available at the project site toward this effort. In the event that the Engineer redirects resources due to Contractor's non-compliance with the provisions of this section, "Water Pollution Control", the County will not be responsible for any delays to the Contractor's schedule resulting from the reallocation, and no compensation shall be made therefor.

Implementation of water pollution control practices may vary by season. The SWMP and these special provisions shall be followed for control practice selection of year-round, rainy season and non-rainy season water pollution control practices.

#### **Minimum Construction Site Storm Water Management Practices**

The storm water management practices described below is the minimum, required water quality protection measures applicable to all construction sites below 3000 feet in elevation within Western El Dorado County. This listing does not include the various inspection, record keeping, training and reporting requirements. Additionally, there will be instances where project and site conditions require supplementing or deviating from these minimum protection requirements. The Contractor is expected to deploy measures sufficient to achieve compliance with the State Water Resources Control Board's (SWRCB) NPDES General Permit for Storm Water Discharges Associated with Construction Activity.

#### **Preservation of Existing Vegetation and Protection of Environmentally Sensitive Areas**

Prior to the commencement of soil-disturbing activities, areas of existing vegetation that are to remain and environmentally sensitive areas (i.e. wetlands, protected habitats, etc) shall be fenced for protection.

#### **Storm Water Run-On and Concentrated Flows**

Existing watercourses shall be protected; and if diverted, handled in a non-eroding fashion. To the extent feasible, all concentrated water flows shall be channeled away from disturbed soil areas / stockpiles. Concentrated water flows shall be conveyed in a non-eroding fashion.



### **Stockpile Management**

Stockpiles shall be managed as follows:

- Soil stockpiles

Rainy season:

Covered, or protected with soil stabilization measures and perimeter sediment barriers

Non-rainy season:

Covered or protected with perimeter sediment barriers

Concrete/asphalt rubble, rock and aggregate base/sub-base

Covered or protected with perimeter sediment barriers

“Cold mix” asphalt

Covered

### **Sediment Tracking Control**

Appropriate measures shall be deployed to minimize any tracking of sediment off-site by vehicles and/or equipment. These measures include stabilized construction entrances/exits and roadways, and tire washing. Where tracking occurs, streets shall be swept using a pickup sweeper with water supply.

### **Non-Storm Water Management**

Non-storm water discharges shall be minimized to the extent feasible. Sediment-laden non-storm water is required to be filtered (or equivalent treatment) prior to discharging. Measures required to manage non-storm water discharges include: water conservation practices, dust control, material storage practices, vehicle/equipment operation and maintenance requirements, waste management practices, and spill prevention/control measures.

### **Disturbed Soil Area Management**

Disturbed soil areas (DSA) shall be protected with an “effective combination” of measures including soil stabilization, sediment barriers and basins / traps. There may be situations where “Sediment Basins” or “Treatment” are able to substitute as alternative control measures to the normally required “effective combination” of soil stabilization, sediment barriers and basins / traps. However, when substituting these measures, the Contractor must be prepared to demonstrate that the sediment load within storm water discharges from the construction site does not exceed natural or pre-construction levels.

Soil stabilization measures include:

- Hydraulic mulch
- Hydroseeding
- Suitably stabilized, non-polluting straw / wood / organic mulch
- Geotextiles, mats, plastic covers and erosion control blankets
- Stabilized construction roadways

Sediment barriers include:

- Silt fences
- Sand/gravel bag barriers
- Straw bale barriers
- Fiber rolls

Basin / traps include:

- Desilting basins
- Sediment traps

On DSAs with slope lengths greater than ten (10) feet, the following measures shall be deployed:

Rainy season (Oct. 15th to May 1st):

- Non-active areas (no soil disturbing activities for 21 or more days)
  - On slopes equal to or flatter than 1:20 (V/H), soil stabilization
  - On slopes steeper than 1:20 (V/H), soil stabilization and sediment barriers
- Active areas
  - On slopes steeper than 1:20 (V/H), sediment barriers
  - On slopes steeper than 1:2 (V/H) with slope lengths greater than 15 meters: soil stabilization; sediment barriers; and where feasible, basins/traps

Non-rainy season:

- Non-active areas (no soil disturbing activities for 21 or more days)
  - On slopes steeper than 1:2 (V/H), sediment barriers

General:

- Protection shall be deployed on non-active DSAs within fourteen (14) days from the cessation of soil-disturbing activities or one day prior to the predicted (40% or more chance) onset of significant precipitation, whichever occurs first. Contractor shall ensure that it has provided sufficient resources to install protection within these time frames. Protection shall be deployed on active DSAs prior to the predicted (40% or more chance) onset of significant precipitation.
- Properly drained terraces, at least eight (8) feet wide, shall be provided at intervals not more than every twenty five (25) feet in height on all permanent slopes and non-active DSAs exceeding 30 feet in height.
- “Sediment Basin:” A basin with a capacity equivalent to at least 3600 cubic feet of storage (as measured from the bottom of the basin to the principal outlet) per acre draining into the basin. The length of the basin shall be more than twice the basin’s width (length is determined by measuring the distance between the inlet and the outlet). The depth of the basin must not be less than three feet nor greater than five feet.
- “Treatment”: A combination of basin and treatment engineered to capture and treat (to remove 0.01 mm sized particles and larger) the 10-year, 6-hour rain event using  $Q=CxIxA$  where  $C=0.5$  and  $I$  ranges from 0.286 (El Dorado Hills) to 0.500 (Sly Park).

**General reference: “Storm Water Management Plan (SWMP) for Western El Dorado County”, Updated May 2004.**

**Available online at: <http://www.co.el-dorado.ca.us/emd/solidwaste/storm.html>**

**Detailed references:**

**Caltrans “Construction Site Best Management Practices (BMPs) Manual”, March 2003. Available online at:**

**[http://www.dot.ca.gov/hq/construc/stormwater/CSBMPPM\\_303\\_Final.pdf](http://www.dot.ca.gov/hq/construc/stormwater/CSBMPPM_303_Final.pdf)**

**Caltrans “Statewide Storm Water Quality Practice Guidelines”, May 2003.**

**Available online at:**

**[http://www.dot.ca.gov/hq/env/stormwater/special/newsetup/pdfs/management\\_ar\\_rwp/CT\\_SW-RT-02-009.pdf](http://www.dot.ca.gov/hq/env/stormwater/special/newsetup/pdfs/management_ar_rwp/CT_SW-RT-02-009.pdf)**

## **MAINTENANCE**

To ensure the proper implementation and functioning of water pollution control practices, the Contractor shall regularly inspect and maintain the construction site for the water pollution control practices identified in the SWPPP.

## **REPORTING REQUIREMENTS**

### **Report of Discharges, Notices or Orders**

If the Contractor identifies discharges into surface waters or drainage systems in a manner causing, or potentially causing, a condition of pollution, or if the project receives a written notice or order from a regulatory

agency, the Contractor shall immediately inform the Engineer. The Contractor shall submit a written report to the Engineer within seven (7) days of the discharge event, notice or order. The report shall include the following information:

- A. The date, time, location, nature of the operation, and type of discharge, including the cause or nature of the notice or order.
- B. The water pollution control practices deployed before the discharge event, or prior to receiving the notice or order.
- C. The date of deployment and type of water pollution control practices deployed after the discharge event, or after receiving the notice or order, including additional measures installed or planned to reduce or prevent reoccurrence.
- D. An implementation and maintenance schedule for affected water pollution control practices.

#### **Report of First-Time Non-Storm Water Discharge**

The Contractor shall notify the Engineer at least three (3) days in advance of first-time non-storm water discharge events, excluding exempted discharges. The Contractor shall notify the Engineer of the operations causing non-storm water discharges and shall obtain field approval for first-time non-storm water discharges. Non-storm water discharges shall be monitored at first-time occurrences and routinely thereafter.

#### **Annual Certifications**

By June 15 of each year, the Contractor shall complete and submit an Annual Certification of Compliance to the Engineer.

#### **PAYMENT**

The contract lump sum price paid for prepare storm water pollution prevention plan shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in developing, preparing, obtaining approval of, revising, and amending the SWPPP, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The cost of implementing, maintaining, and removing temporary water pollution control measures, excluding the items of work shown on the Erosion Control plans, [temporary fence (Type ESA), temporary fiber rolls, temporary check dam and Erosion control (Type D)], as described in this special provision will be paid for by the County, via Force Account Change Order. Payment of Subsistence and Travel allowance shall be excluded from this Force Account Change Order. Payment for temporary water pollution control measures shall be limited to those measures contained in the March 2003 Caltrans Construction Site Best Management Practices (BMPs) Manual, excluding Section 7, "Non-storm Water Best Management Practices", and Section 8 "Waste Management and Materials Pollution Control Best Management Practices". If the Contractor finds it necessary to use water pollution control measures not included in the aforementioned approved BMPs to achieve compliance with local, state, or federal water pollution control regulations, then implementation, maintenance and removal of the unapproved BMPs shall be at the Contractor's expense..

The determination of cost will be made by determining the cost of implementing, maintaining and removing temporary water pollution control practices in conformance with the provisions in Section 9-1.03, "Force Account Payment", of the Standard Specifications. Cleanup, repair, removal, disposal, improper installation, and replacement of water pollution control practices damaged by the Contractor's negligence, shall not be considered as included in the cost for implementing, maintaining and removing temporary water pollution control measures. These costs shall be borne by the contractor and no separate payment will be made therefor.

#### **10-1.04 TEMPORARY CONCRETE WASHOUT FACILITY**

Temporary concrete washout facilities shall be constructed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary concrete washout facilities shall be one of the water pollution control practices for waste management and materials pollution control. The SWPPP shall include the use of temporary concrete washout facilities.

## **MATERIALS**

### **Plastic Liner**

Plastic liners shall be single ply, new polyethylene sheeting, a minimum of 0.25-mm thick and shall be free of holes, punctures, tears or other defects that compromise the impermeability of the material. Plastic liners shall not have seams or overlapping joints.

### **Gravel-filled Bags**

Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:

Specification	Requirements
Mass per unit area, grams per square meter, min. ASTM Designation: D 5261	270
Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632*	0.89
Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method	70

\* or appropriate test method for specific polymer

Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width.

Yarn used for binding gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color.

Gravel shall be between 10 mm and 20 mm in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials.

The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

### **Straw Bales**

Straw for straw bales shall conform to the provisions in Section 20-2.06, "Straw," of the Standard Specifications.

Straw bales shall be a minimum of 360 mm in width, 450 mm in height, 900 mm in length and shall have a minimum mass of 23 kg. The straw bale shall be composed entirely of vegetative matter, except for binding material.

Straw bales shall be bound by either wire, nylon or polypropylene string. Jute or cotton binding shall not be used. Baling wire shall be a minimum 1.57 mm in diameter. Nylon or polypropylene string shall be approximately 2 mm in diameter with 360 N of breaking strength.

### **Stakes**

Stakes shall be wood or metal. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots or other defects which would render them unfit for the purpose intended. Wood stakes shall be a minimum 50 mm x 50 mm in size. Metal stakes may be used as an alternative, and shall be a minimum 13 mm in diameter. Stakes shall be a minimum 1.2 m in length. The tops of the metal stakes shall be bent at a 90-degree angle or capped with an orange or red plastic safety cap that fits snugly to the metal stake. The Contractor shall submit a sample of the metal stake and plastic cap, if used, for the Engineer's approval before installation.

### **Staples**

Staples shall be as shown on the plans. An alternative attachment device such as geotextile pins or plastic pegs may be used instead of staples. The Contractor shall submit a sample of the alternative attachment device for the Engineer's approval before installation.

## Signs

Wood posts for signs shall conform to the provisions in Section 56-2.02B, "Wood Posts," of the Standard Specifications. Lag screws shall conform to the provisions in Section 56-2.02D, "Sign Panel Fastening Hardware," of the Standard Specifications.

Plywood shall be freshly painted for each installation with not less than 2 applications of flat white paint. Sign letters shown on the plans shall be stenciled with commercial quality exterior black paint. Testing of paint will not be required.

## INSTALLATION

Temporary concrete washout facilities shall be as follows:

1. Temporary concrete washout facilities shall be installed before beginning placement of concrete and located a minimum of 15 m from storm drain inlets, open drainage facilities, and water courses unless determined infeasible by the Engineer. Temporary concrete washout facilities shall be located away from construction traffic or access areas at a location determined by the Contractor and approved by the Engineer.
2. A sign shall be installed adjacent to each washout facility at a location determined by the Contractor and approved by the Engineer. Signs shall be installed in conformance with the provisions in Section 56-2.03, "Construction," and Section 56-2.04, "Sign Panel Installation," of the Standard Specifications.
3. The length and width of a temporary concrete washout facility may be increased from the minimum dimensions shown on the plans upon approval of the Engineer.
4. Temporary concrete washout facilities shall be constructed in sufficient quantity and size to contain liquid and concrete waste generated by washout operations for concrete wastes. These facilities shall be constructed to contain liquid and concrete waste without seepage, spills, or overflow.
5. Berms for below grade temporary concrete washout facilities shall be constructed from compacted native material. Gravel may be used in conjunction with compacted native material.
6. A plastic liner shall be installed in below grade temporary concrete washout facilities.

Details for an alternative temporary concrete washout facility shall be submitted to the Engineer for approval at least 7 days before installation.

When temporary concrete washout facilities are no longer required for the work, as determined by the Engineer, the hardened concrete and liquid residue shall be removed and disposed of in conformance with the provisions in Section 15-3.02, "Removal Methods," of the Standard Specifications. Temporary concrete washout facilities shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary concrete washout facilities shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## MAINTENANCE

Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 300 mm. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials shall be removed and disposed of in conformance with the provisions in Section 15-3.02, "Removal Methods," of the Standard Specifications. Holes, rips, and voids in the plastic liner shall be patched and repaired by taping or the plastic liner shall be replaced. The plastic liner shall be replaced when patches or repairs compromise the impermeability of the material as determined by the Engineer.

Gravel bags shall be replaced when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out.

Temporary concrete washout facilities shall be repaired or replaced on the same day the damage occurs. Damage to temporary concrete washout facilities resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

## MEASUREMENT AND PAYMENT

Quantities of temporary concrete washout facilities will be measured as units determined from actual count in place.

The contract unit price paid for temporary concrete washout facility shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing a temporary concrete washout facility, complete in place, including excavation and backfill, maintenance, and removal, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.05 TEMPORARY CHECK DAM**

Temporary check dams shall be constructed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary check dams shall be one of the water pollution control practices for sediment control. The SWPPP shall include the use of temporary check dams.

Temporary check dams shall be either Type 1 (fiber roll) or Type 2 (gravel bag), as designated on the plans.

#### **MATERIALS**

##### **Fiber Roll**

Fiber rolls shall be one of the following:

1. Constructed with a premanufactured blanket consisting of one material or a combination of materials consisting of wood excelsior, rice or wheat straw, or coconut fibers. The blanket shall be between 2.0 m and 2.4 m in width and between 20 m and 29 m in length. Wood excelsior shall be individual fibers, of which 80 percent shall be 150 mm or longer in length. The blanket shall have a photodegradable plastic netting or biodegradable jute, sisal, or coir fiber netting on at least one side. The blanket shall be rolled along the width and secured with jute twine spaced 2 m apart along the full length of the roll and placed 150 mm from the ends of each roll. The finished roll shall be between 200 mm and 250 mm in diameter, between 3 m and 6 m in length and shall weigh at least 0.81-kg/m. More than one blanket may be required to achieve the finished roll diameter. When more than one blanket is required, blankets shall be jointed longitudinally with an overlap of 150 mm along the length of the blanket.
2. A premanufactured roll of rice or wheat straw, wood excelsior, or coconut fiber encapsulated within a photodegradable plastic or biodegradable jute, sisal, or coir fiber netting. Rolls shall be between 200 mm and 250 mm in diameter, between 3 m and 6 m in length and shall weigh at least 1.6 kg/m. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the rolls.

##### **Stakes**

Wood stakes shall be a minimum of 19 mm x 38 mm x 450 mm. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots or other defects which would render them unfit for the purpose intended. Metal stakes may be used as an alternative. The Contractor shall submit a sample of the metal stake for the Engineer's approval before installation. The tops of the metal stakes shall be bent at a 90-degree angle.

##### **Rope**

Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 6.35 mm.

##### **Gravel-filled Bag**

Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:

Specification	Requirements
Mass per unit area, grams per square meter, min. ASTM Designation: D 5261	270
Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632*	0.89
Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D4355, xenon arc lamp method	70

\* or appropriate test method for specific polymer

Gravel bags shall be between 600 mm and 800 mm in length, and between 400 mm and 500 mm in width.

Yarn used in construction of the gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color.

Gravel shall be between 10 mm and 20 mm in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 13 kg and 22 kg in mass.

### INSTALLATION

Temporary check dams shall be installed as follows:

1. Temporary check dam (Type 1): Rope and notched stakes shall be used to restrain the fiber rolls against the surface of the unlined ditch or swale. Stakes shall be driven into the slope until the notch is even with the top of the fiber roll. Rope shall be knotted at each stake and laced between stakes. After installation of the rope, stakes shall be driven into the slope so that the rope will hold the fiber roll tightly to the slope. Furrows will not be required. If metal stakes are used, the rope may be laced and knotted on the bend at the top of the metal stakes.
2. Temporary check dam (Type 2): A single layer of gravel bags shall be placed in lined or unlined ditches with ends abutted tightly and not overlapped.
3. The bedding area for the temporary check dam shall be cleared of obstructions including, rocks, clods, and debris greater than 25 mm in diameter before installation.
4. The temporary check dam shall be installed across and approximately perpendicular to the centerline of a ditch or drainage line.
5. The temporary check dam shall be installed with sufficient spillway depth to prevent flanking of concentrated flow around the ends of the check dam.
6. The temporary check dam shall be installed in an unlined ditch or swale before the application of other temporary erosion control or soil stabilization material in the same unlined ditch or swale.
7. The temporary check dam shall be installed upon completion of temporary erosion control blanket in earthen ditches or swales.

Details for an alternative temporary check dam shall be submitted to the Engineer for approval at least 7 days before installation.

When the temporary check dam is no longer required, as determined by the Engineer, it shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbances including holes and depressions caused by the installation and removal of the temporary check dam shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

### MAINTENANCE

Temporary check dams shall be maintained to provide sediment holding capacity and to reduce runoff velocities. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping fiber rolls shall be repaired with additional stakes or replaced. Gravel bags shall be replaced when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out. Locations where rills and other evidence of concentrated runoff have occurred beneath the check dams shall be corrected.

When sediment exceeds 1/3 of the height of the check dam above ground, or when directed by the Engineer, sediment shall be removed. The removed sediment shall be deposited within the project limits so that the sediment is not subject to erosion by wind or by water.

Temporary check dams shall be repaired or replaced the same day damage occurs. Washouts or scour beneath the temporary check dam shall be repaired. Temporary check dams damaged during the progress of work or resulting from the Contractor's vehicles, equipment, or operations shall be repaired or replaced at the Contractor's expense.

#### **MEASUREMENT AND PAYMENT**

Quantities of temporary check dams to be paid for will be determined by the unit from actual count.

The contract unit price paid for temporary check dam shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing temporary check dams, complete in place, including maintenance, and removal, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Temporary check dams not shown on the erosion control plans but placed for water pollution control purposes will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Attention is directed to "Water Pollution Control" of these special provisions.

#### **10-1.06 TEMPORARY FIBER ROLL**

Temporary fiber roll shall be furnished, installed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary fiber roll shall be installed on excavation and embankment slopes and other disturbed soil areas, active or nonactive.

Temporary fiber roll shall be one of the water pollution control practices for sediment control. The SWPPP shall include the use of temporary fiber roll.

Temporary fiber roll shall be either Type 1 or Type 2.

#### **MATERIALS**

##### **Fiber Roll**

Fiber roll shall be either:

1. Constructed with a premanufactured blanket consisting of either wood excelsior, rice or wheat straw, or coconut fibers or a combination of these materials. The blanket shall be between 2.0 m and 2.4 m in width and between 20 m and 29 m in length. Wood excelsior shall be individual fibers, of which 80 percent shall be 150 mm or longer in length. The blanket shall have a photodegradable plastic netting or biodegradable jute, sisal, or coir fiber netting on at least one side. The blanket shall be rolled along the width and secured with jute twine spaced 2 m apart along the full length of the roll and placed 150 mm from the ends of each roll. The finished roll shall be between 200 mm and 250 mm in diameter, a minimum of 6 m in length, and shall weigh a minimum 0.81-kg/m. More than one blanket may be required to achieve the finished roll diameter. When more than one blanket is required, blankets shall be jointed longitudinally with an overlap of 150 mm along the length of the blanket.
2. A premanufactured roll of rice or wheat straw, wood excelsior, or coconut fiber encapsulated within a photodegradable plastic or biodegradable jute, sisal, or coir fiber netting. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the roll. Rolls shall be between 200 mm and 300 mm in diameter. Rolls between 200 mm and 250 mm in diameter shall have a minimum weight of 1.6 kg/m and a minimum length of 6 m. Rolls between 250 mm and 300 mm in diameter shall have a minimum weight of 4.5 kg/m and a minimum length of 3 m.

##### **Stakes**

Wood stakes shall be a minimum of 19 mm x 19 mm x 450 mm in size for Type 1 installation, or a minimum of 19 mm x 38 mm x 450 mm in size for Type 2 installation. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Metal stakes shall not be used.

##### **Rope**

Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 6.35 mm.



## **INSTALLATION**

Temporary fiber roll shall be installed as follows:

1. Temporary fiber roll (Type 1): Furrows shall be constructed to a depth between 50 mm and 100 mm, and to a sufficient width to hold the fiber roll. Stakes shall be installed 600 mm apart along the length of the fiber rolls and stopped at 300 mm from each end of the rolls. Stakes shall be driven to a maximum of 50 mm above, or flush with the top of the roll.
2. Temporary fiber roll (Type 2): Rope and notched stakes shall be used to restrain the fiber rolls against the slope. Stakes shall be driven into the slope until the notch is even with the top of the fiber roll. Rope shall be knotted at each stake and laced between stakes. After installation of the rope, stakes shall be driven into the slope such that the rope will hold the fiber roll tightly to the slope. Furrows will not be required.
3. Temporary fiber rolls shall be placed 3 m apart along the slope for slope inclination (vertical:horizontal) of 1:2 and steeper, 4.5 m apart along the slope for slope inclination between 1:2 and 1:4, 6 m apart along the slope for slope inclination between 1:4 and 1:10, and a maximum of 15 m apart along the slope for slope inclination of 1:10 and flatter.
4. The bedding area for the fiber roll shall be cleared of obstructions including rocks, clods, and debris greater than 25 mm in diameter before installation.
5. Temporary fiber rolls shall be installed approximately parallel to the slope contour.
6. Temporary fiber rolls shall be installed before the application of other temporary erosion control or soil stabilization materials in the same area.

When no longer required, as determined by the Engineer, temporary fiber rolls shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. Temporary fiber rolls may be abandoned in place when approved in writing by the Engineer.

Ground disturbances including holes and depressions caused by the installation and removal of the temporary fiber roll shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## **MAINTENANCE**

Temporary fiber rolls shall be maintained to disperse concentrated water runoff and to reduce runoff velocities. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping fiber rolls shall be repaired with additional stakes or replaced. Locations where rills and other evidence of concentrated runoff have occurred beneath the rolls shall be corrected. Temporary fiber rolls shall be repaired or replaced within 24 hours of identifying the deficiency.

## **MEASUREMENT AND PAYMENT**

Quantities of temporary fiber rolls to be paid for will be determined by the meter measured along the centerline of the installed roll. Where temporary fiber rolls are joined and overlapped, the overlap will be measured as a single installed roll.

The contract price paid per meter for temporary fiber roll shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing temporary fiber rolls, complete in place, including furrow excavation and backfill, maintenance, and removal, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Temporary fiber rolls not shown on the erosion control plans but placed for water pollution control purposes will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Attention is directed to "Water Pollution Control" of these special provisions.

Damage to temporary fiber rolls resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

### **10-1.07 TEMPORARY FENCE**

Temporary fence shall be furnished, constructed, maintained, and later removed as shown on the plans, as specified in these special provisions and as directed by the Engineer.

Except as otherwise specified in this section, temporary fence shall conform to the plan details and the specifications for permanent fence of similar character as provided in Section 80, "Fences," of the Standard Specifications.

Used materials may be installed provided the used materials are good, sound and are suitable for the purpose intended, as determined by the Engineer.

Materials may be commercial quality provided the dimensions and sizes of the materials are equal to, or greater than, the dimensions and sizes shown on the plans or specified herein.

Posts shall be either metal or wood at the Contractor's option.

Galvanizing and painting of steel items will not be required.

Treating wood with a wood preservative will not be required.

Concrete footings for metal posts will not be required.

Temporary fence that is damaged during the progress of the work shall be repaired or replaced by the Contractor at the Contractor's expense.

When no longer required for the work, as determined by the Engineer, temporary fence shall be removed. Removed facilities shall become the property of the Contractor and shall be removed from the site of the work, except as otherwise provided in this section.

Removed temporary fence materials that are not damaged may be constructed in the permanent work provided the materials conform to the requirements specified for the permanent work and such materials are new when used for the temporary fence.

Holes caused by the removal of temporary fence shall be backfilled in conformance with the provisions in the second paragraph of Section 15-1.02, "Preservation of Property," of the Standard Specifications.

The various types and kinds of temporary fence will be measured and paid for in the same manner specified for permanent fence of similar character as provided in Section 80, "Fences," of the Standard Specifications.

Full compensation for maintaining, removing, and disposing of temporary fence shall be considered as included in the contract prices paid per meter for the various types of temporary fence and no additional compensation will be allowed therefor.

#### **10-1.08 TEMPORARY FENCE (TYPE ESA)**

Temporary fence (Type ESA) shall be furnished, installed, maintained, and later removed in conformance with the details shown on the plans, as specified in these special provisions and as directed by the Engineer.

##### **MATERIALS**

Used materials may be installed provided the used materials conform to these special provisions. Materials for temporary fence (Type ESA) shall conform to the following:

##### **High Visibility Fabric**

High visibility fabric shall be machine produced, orange colored mesh manufactured from polypropylene or polyethylene. High visibility fabric may be made of recycled materials. Materials shall not contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. High visibility fabric shall be fully stabilized ultraviolet resistant, shall be a minimum of 1.22 m in width with a maximum mesh opening of 50 mm x 50 mm. High visibility fabric shall be furnished in one continuous width and shall not be spliced to conform to the specified width dimension.

##### **Posts**

Posts for temporary fence (Type ESA) shall be of one of the following:

- A. Wood posts shall be fir or pine, shall have a minimum cross section of 50 mm x 50 mm, and a minimum length of 1.6 m. The end of the post to be embedded in the soil shall be pointed. Wood posts shall not be treated with wood preservative.
- B. Steel posts shall have a "U", "T", "L" or other cross sectional shape that resists failure by lateral loads. Steel posts shall have a minimum mass per length of 1.1 kg/m and a minimum length of 1.6 m. One end of the steel post shall be pointed and the other end shall have a high visibility colored top.

##### **Fasteners**

Fasteners for attaching high visibility fabric to the posts shall be as follows:

- A. The high visibility fabric shall be attached to wooden posts with commercial quality nails or staples, or as recommended by the manufacturer or supplier.
- B. Tie wire or locking plastic fasteners shall be used for attaching the high visibility fabric to steel posts. Maximum spacing of tie wire or fasteners shall be 600 mm along the length of the steel post.

## Signs

Signs shall be posted on all temporary fence (Type ESA) placed to protect the valley elderberry bush. The sign shall be weatherproof and fade-proof and may include plastic laminated printed paper affixed to an inflexible weatherproof backer board. The sign panel shall be affixed to the high visibility fabric with tie wire or locking plastic fasteners. The top of the sign panel shall be flush with the top of the high visibility fabric. Sign panels shall be placed at 30 m apart along the length of the temporary fence (Type ESA), and at each end of the fence.

The sign shall have the following information: "This bush is potential habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment."

## INSTALLATION

Temporary fence (Type ESA) shall be installed as follows:

- A. All fence construction activities shall be conducted from outside the ESA as shown on the plans or as staked.
- B. Posts shall be embedded in the soil a minimum of 380 mm. Post spacing shall be 2.5 m maximum from center to center and shall at all times support the fence in a vertical position.
- C. Temporary fence (Type ESA) shall be constructed prior to clearing and grubbing work, shall enclose the foliage canopy (drip line) of protected plants, and shall not encroach upon visible roots of the plants.
- D. A valley elderberry bush shrub was identified approximately 9 meters outside the project area adjacent to Helmrich Lane. Fencing shall be placed at the edge of the existing road adjacent to the elderberry bush, for 30.5 meters along the road on both sides of the bush for a total of 61 meters to protect it from construction vehicles, or as directed by the Engineer.
- E. Temporary fence (Type ESA) shall be installed at least 1.5 meter from the dripline of all Oak trees within the project limits as directed by the Engineer. Installation of temporary fence (Type ESA) around oak trees will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

When Type ESA temporary fence is no longer required, as determined by the Engineer, the temporary fence shall become the property of the Contractor and shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications, except when reused as provided in this section.

Holes caused by the removal of temporary fence (Type ESA) shall be backfilled in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## MAINTENANCE

Temporary fence (Type ESA) that is damaged during the progress of the work shall be repaired or replaced by the Contractor the same day the damage occurs.

## MEASUREMENT AND PAYMENT

Temporary fence (Type ESA) shall be measured and paid for in the same manner specified for permanent fence as provided in Section 80, "Fences," of the Standard Specifications.

Full compensation for signs and maintaining, removing, and disposing of temporary fence (Type ESA) shall be considered as included in the contract price paid per meter for temporary fence (Type ESA) and no additional compensation will be allowed therefor.

## 10-1.09 TEMPORARY CONSTRUCTION ENTRANCE

Temporary construction entrances shall be constructed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan (SWPPP) in conformance with "Water Pollution Control" of these special provisions, and in conformance with details shown on the plans and these special provisions.

Temporary construction entrances shall be one of the water pollution control practices for tracking control. The SWPPP shall include the use of temporary construction entrances.

Temporary construction entrances shall be either Type 1 or Type 2.

## MATERIALS

### Temporary Entrance Fabric

Temporary entrance fabric shall be manufactured from polyester, nylon, or polypropylene material, or any combination thereof. Temporary entrance fabric shall be a nonwoven, needle-punched fabric, free of needles which may have broken off during the manufacturing process. Temporary entrance fabric shall be permeable and shall not act as a wicking agent.

Temporary entrance fabric shall be manufactured from virgin, recycled, or a combination of virgin and recycled polymer materials. No virgin or recycled materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. The Engineer may order tests to confirm the absence of biodegradable filler materials in conformance to the requirements in ASTM Designation: E 204 (Fourier Transformed Infrared Spectroscopy-FTIR).

Temporary entrance fabric shall conform to the following requirements:

Specification	Requirements
Mass per unit area, grams per square meter, min. ASTM Designation: D 5261	235
Grab tensile strength (25-mm grip), kilonewtons, min. ASTM Designation: D4632*	0.89
Elongation at break, percent min. ASTM Designation: D4632*	50
Toughness, kilonewtons, min. (percent elongation x grab tensile strength)	53

\* or appropriate test method for specific polymer

### Rocks

Rocks shall conform to the material quality requirements in Section 72-2.02, "Materials," of the Standard Specifications for shape and for apparent specific gravity, absorption, and durability index. Rocks used for the temporary entrance shall conform to the following sizes:

Square Screen Size (mm)	Percentage Passing	Percentage Retained
150	100	0
75	0	100

### Corrugated Steel Panels

Corrugated steel panels shall be prefabricated and shall be pressed or shop welded, with a slot or hooked section to facilitate coupling at the ends of the panels.

## INSTALLATION

Temporary construction entrances shall be installed as follows:

1. Before placing the temporary entrance fabric, the areas shall be cleared of all trash and debris. Vegetation shall be removed to the ground level. Trash, debris, and removed vegetation shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.
2. A sump shall be constructed within 6 m of each temporary construction entrance as shown on the plans.
3. Before placing the temporary entrance fabric, the ground shall be graded to a uniform plane. The relative compaction of the top 0.5-m shall be not less than 90 percent. The ground surface shall be free of sharp objects that may damage the temporary entrance fabric, and shall be graded to drain to the sump as shown on the plans.
4. Temporary entrance fabric shall be positioned longitudinally along the alignment of the entrance, as directed by the Engineer.
5. The adjacent ends of the fabric shall be overlapped a minimum length of 300 mm.

6. Rocks to be placed directly over the fabric shall be spread in the direction of traffic, longitudinally and along the alignment of the temporary construction entrance.
7. During spreading of the rocks, vehicles or equipment shall not be driven directly on the fabric. A layer of rocks a minimum 150 mm thick shall be placed between the fabric and the spreading equipment to prevent damage to the fabric.
8. For Type 2 temporary construction entrances, a minimum of 6 coupled panel sections shall be installed for each temporary construction entrance. Before installing the panels, the ground surface shall be cleared of all debris to ensure uniform contact with the ground surface.

Fabric damaged during rock placement shall be repaired by placing a new piece of fabric over the damaged area. The piece of fabric shall be large enough to cover the damaged area and provide a minimum 450-mm overlap on all edges.

Details for a proposed alternative temporary construction entrance or alternative sump shall be submitted to the Engineer for approval at least 7 days before installation. The Contractor may eliminate the sump if approved in writing by the Engineer.

When no longer required as determined by the Engineer, temporary construction entrances shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary construction entrance, including the sumps, shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

While the temporary construction entrance is in use, pavement shall be cleaned and sediment removed at least once a day, and as often as necessary when directed by the Engineer. Soil and sediment or other extraneous material tracked onto existing pavement shall not be allowed to enter drainage facilities.

#### **MAINTENANCE**

The Contractor shall maintain temporary construction entrances throughout the contract or until removed. The Contractor shall prevent displacement or migration of the rock surfacing or corrugated steel panels. Significant depressions resulting from settlement or heavy equipment shall be repaired by the Contractor, as directed by the Engineer.

Temporary construction entrances shall be maintained to minimize tracking of soil and sediment onto existing public roads.

If buildup of soil and sediment deter the function of the temporary construction entrance, the Contractor shall immediately remove and dispose of the soil and sediment, and install additional corrugated steel panels and spread additional rocks to increase the capacity of the temporary construction entrance.

Temporary construction entrances shall be repaired or replaced on the same day the damage occurs. Damage to the temporary construction entrance resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

#### **MEASUREMENT AND PAYMENT**

Quantities of temporary construction entrances will be determined from actual count in place.

The contract unit price paid for temporary construction entrance shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing temporary construction entrance, complete in place, including excavation and backfill, maintenance, and removal, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.10 TEMPORARY CREEK DIVERSION SYSTEM**

Temporary creek diversion system shall be constructed, maintained, and later removed at the locations shown on the approved Storm Water Pollution Prevention Plan in conformance with "Water Pollution Control" of these special provisions, and in conformance with these special provisions.

Temporary creek diversion system shall be one of the water pollution control practices for non-storm water management control. The Storm Water Pollution Prevention Plan shall include the use of temporary creek diversion system. However, payment for the temporary creek diversion will be in accordance with this section and not in accordance with Water Pollution Control special provisions. Attention is directed to Items 10 & 12 of Agreement Regarding Proposed Stream Alteration.

The Contractor shall design a temporary creek diversion system that complies with all permits requirements and these special provisions. The design shall demonstrate that the diversion system can handle the anticipated flows and must state the assumptions used for the maximum flows. Attention is directed to "Finalized Weber Reservoir Operation Plan" in the Informational Handout regarding anticipated flows. The Contractor shall submit details for a temporary creek diversion system to the Engineer for approval twenty days prior to starting any work that will require the temporary creek diversion. The submittal shall include a contingency plan in the event the temporary creek diversion system fails. Attention is directed to Items 10 & 12 of Agreement Regarding Proposed Stream Alteration.

#### **INSTALLATION**

Use of the temporary creek diversion system is restricted to the period from May 1 to October 15. If the work requires more than one restricted period, the temporary creek diversion system shall be removed by the conclusion of the restricted period and repositioned during the following restricted period at the Contractor's expense. Attention is directed to "Relations with California Department of Fish and Game", "Relations with the Army Corps of Engineers" and "Water Pollution Control" of these special provisions regarding additional permit restrictions.

The Contractor shall be responsible for preventing, at his expense, any leakage in the temporary creek diversion system that may interfere with the work.

When no longer required, as determined by the Engineer, temporary creek diversion system shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Holes, depressions or other ground disturbance caused by the installation and removal of the temporary creek diversion system shall be backfilled and repaired in conformance with the provisions in the second paragraph of Section 15-1.02, "Preservation of Property," of the Standard Specifications.

#### **MAINTENANCE**

Temporary creek diversion system shall be maintained to provide adequate holding capacity with a minimum freeboard of 300 mm.

Temporary creek diversion system shall be repaired or replaced on the same day when the damage occurs. Damage to the temporary creek diversion system resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

If during the progress of the work it becomes necessary to reposition or relocate portions of the temporary creek diversion system, the work shall be done at the Contractor's expense.

#### **PAYMENT**

The contract lump sum price paid for temporary creek diversion shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in temporary creek diversion system, complete in place as shown on the plans, including design of the system and submittal of the plan, implementation, maintenance, and removal of the temporary creek diversion system, dewatering necessary to dewater within the limits of the temporary creek diversion system if the flows remaining after the diversion is installed will not just flow downstream, and restoring the creek back to its original condition as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.11 EQUIPMENT LOADING ON OLD WEBER CREEK BRIDGE**

The operation of equipment on bridges shall conform to the provisions in Section 7-1.02, "Load Limitations," of the Standard Specifications and these special provisions.

The following bridge has been designated for crossing of Contractor's equipment:

- A. Old Weber Creek Bridge on Old Highway 50

The above mentioned bridge is closed to public traffic and is no longer being maintained. As-builts are available from the County upon request.

The Contractor will be permitted to cross the bridge listed with equipment which exceeds the size and weight limitations specified in Section 7-1.02, but does not exceed the load limitations for which the bridge was originally designed for, H-15 truck with concrete stress of 1,000 psi, unless approved in advance by the Engineer. In the event Contractor proposes to exceed H-15 loading, Contractor shall prepare a Bridge Capacity Analysis detailing the bridge loading capacity/proposed loading plan, demonstrating the proposed loading will not damage the structure, prepared, stamped and sealed by a Professional Engineer, and meeting the satisfaction of the County. The

provisions in the last paragraph of Section 7-1.02 concerning increase of load carrying capacity of a structure or structures shall not apply to the above listed bridges, but the provisions in Section 7-1.02 shall apply to all other bridges to be constructed as a part of this contract.

The crossing of the above listed bridge with Contractor equipment shall be in conformance with the following provisions:

- A. The bridge roadway shall be maintained in a smooth condition free of spillage when operating equipment over the bridge.
- B. The Contractor shall protect the bridge, including the deck, at all times from damage.
- C. The approaches at each end of the bridge over which the equipment is to be operated shall be constructed to grades providing a smooth transition to the bridge roadway grades and shall be maintained in a smooth and uniform condition at all times during the operation of the equipment for a length of not less than 150 feet measured from the bridge ends. There shall be no local depressions in the approaches in the vicinity of the bridge ends.
- D. Equipment, either loaded or unloaded, shall be operated at all times at a speed and in a manner resulting in no jolting or bouncing of the equipment while crossing the bridge.
- E. Equipment shall be confined to the center of the structure between the main existing girders.
- F. Only one piece of equipment may be on the bridge at one time.

The weight of equipment shall be verified by weighing when required by the Engineer. Scales will be of the individual wheel or axle type as furnished by the Contractor. The weighing will be done within the limits of the project and within the right of way at a location accessible to the equipment and suitable for weighing operations. The exact location of the weighing shall be determined by the Contractor.

The work of furnishing, installing and maintaining the scales, when ordered by the Engineer, shall be considered as included in prices paid for the various contract items of work and no additional compensation will be allowed therefore.

Upon completion of the Contractor's operations over the bridge, the Contractor shall remove all stains from the bridge roadways, and shall leave the bridge roadways in a condition as good as when the Contractor entered upon the work, in conformance with the provisions in Section 7-1.11, "Preservation of Property," of the Standard Specifications.

Equipment and methods used to clean the bridge roadway shall not damage the structure. Any damage to the bridge, including the bridge deck, shall be repaired or replaced by the Contractor at the Contractor's expense.

Physical barriers used in connection with the Contractor equipment lane shall be removed from the site of the work and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Full compensation for conforming to the requirements of this section shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

#### **10-1.12 TEMPORARY DECKING**

When a portion of a bridge deck or bridge joint is reconstructed, the Contractor shall either complete the work, including curing concrete, before opening that portion of the bridge to traffic or furnish and maintain temporary decking until that portion of the work is complete in place, as determined by the Engineer.

Temporary decking shall conform to Section 15, "Existing Highway Facilities," and to the specifications for falsework in Section 51-1.06, "Falsework," of the Standard Specifications and these special provisions.

Temporary decking shall consist of a steel plate system that spans the incomplete work.

The Contractor may use either rapid setting concrete or high early strength concrete to reconstruct existing deck joint areas, at their option. Concrete to reconstruct existing deck joints will be measured and paid for as structural concrete, bridge.

Attention is directed to "Rapid Setting Concrete Patches" of these special provisions, except for payment. Traffic will not be permitted on rapid setting deck concrete until it has cured for a minimum of 24 hours.-Attention is directed to "High Early Strength Concrete" of these special provisions, except for payment. Traffic will not be permitted on high early strength deck concrete until it has attained a minimum compressive strength of 25 MPa.

#### **SUBMITTALS**

In addition to the requirements in Section 51-1.06A, "Falsework Design and Drawings," of the Standard Specifications, the temporary decking working drawings shall include the following:

- A. Description, location, and value of all loads.
- B. Details of the connection between the temporary decking and the existing structure.
- C. Storage location of equipment and materials that allows for a shift of work and placement of temporary decking to be completed within the time allowed in "Maintaining Traffic" of these special provisions.
- D. Construction sequence and schedule details.
- E. Cure time for concrete that is to be placed under a steel plate system.
- F. Details, materials, and methods for removal of temporary decking and for restoration of the existing structure after the removal.
- G. Drawings shall be signed by an engineer who is registered as a Civil Engineer in the State of California.

## **DESIGN**

In addition to the requirements in Sections 51-1.06A(1), "Design Loads," and 51-1.06A(2), "Design Stresses, Loadings, and Deflections," of the Standard Specifications, the following shall apply to temporary decking:

- A. For the design loading shown on the plans, and deflection shall not exceed 1/300 of the span of the temporary decking.
- B. If there is a horizontal gap of more than 13 mm or a vertical surface difference of more than 6 mm between the temporary decking and the adjacent deck, tapers are required. Tapers with a 1:100 (vertical to horizontal) slope shall be constructed up to and away from the temporary decking. If the temporary decking does not extend the entire width of the roadway, the sides of the temporary decking shall be tapered at a 1:12 (vertical to horizontal) slope. The material used to construct these tapers shall conform to the requirements in "Rapid Setting Concrete Patches" of these special provisions, and tapers shall cure at least 3 hours before traffic will be permitted on the temporary decking.
- C. Temporary decking shall have a uniform surface that provides a coefficient of friction of at least 0.35 as determined by California Test 342.
- D. Steel plate systems shall be mechanically connected to the existing structure and adjacent approaches. When a steel plate spans a joint, the mechanical connection shall accommodate at least 50 percent of the movement rating shown on the plans for that joint.
- E. Temporary decking shall not overstress, induce permanent forces into, or produce cracking in the existing structure.

## **CONSTRUCTION**

The first paragraph of Section 51-1.06C, "Removing Falsework," of the Standard Specifications will not apply to temporary decking.

If unanticipated displacements, cracking, or other damage occurs to the existing structure or to any new components installed in or adjacent to the deck, work on the deck shall stop until corrective measures are complete and satisfactory to the Engineer.

The edges of steel plate systems shall be in full contact with the existing deck and adjacent approach slab and shims may be required. Shims must be securely attached to plate.

When temporary decking is no longer needed, materials and connections shall be removed from the existing structure as soon as possible. Modifications to the existing structure shall be restored except where permanent alterations are shown on the plans.

## **PAYMENT**

Full compensation for temporary decking shall be considered as included in the contract prices paid for various types of work involved, and no separate payment will be made therefor.

### **10-1.13 PROGRESS SCHEDULE (CRITICAL PATH METHOD)**

#### **GENERAL**

##### **Summary**

Critical path method (CPM) progress schedules are required for this project. Whenever the term "schedule" is used in this section, it means CPM progress schedule.

The provisions in Section 8-1.04, "Progress Schedule," of the Standard Specifications do not apply.



## Definitions

The following definitions apply to this section:

- activity:** A task, event or other project element on a schedule that contributes to completing the project. Activities have a description, start date, finish date, duration and one or more logic ties.
- baseline schedule:** The initial schedule showing the original work plan beginning on the date of contract approval. This schedule shows no completed work to date and no negative float or negative lag to any activity.
- contract completion date:** The current extended date for completion of the contract shown on the weekly statement of working days furnished by the Engineer as specified in Section 8-1.06, "Time of Completion," of the Standard Specifications.
- critical path:** The longest continuous chain of activities for the project that has the least amount of total float of all chains. In general, a delay on the critical path will extend the scheduled completion date.
- critical path method (CPM):** A network based planning technique using activity durations and the relationships between activities to mathematically calculate a schedule for the entire project.
- data date:** The day after the date through which a schedule is current. Everything occurring earlier than the data date is "as-built" and everything on or after the data date is "planned."
- early completion time:** The difference in time between an early scheduled completion date and the contract completion date.
- float:** The difference between the earliest and latest allowable start or finish times for an activity.
- milestone:** An event activity that has zero duration and is typically used to represent the beginning or end of a certain stage of the project.
- narrative report:** A document submitted with each schedule that discusses topics related to project progress and scheduling.
- near critical path:** A chain of activities with total float exceeding that of the critical path but having no more than 10 working days of total float.
- scheduled completion date:** The planned project finish date shown on the current accepted schedule.
- State owned float activity:** The activity documenting time saved on the critical path by actions of the State. It is the last activity prior to the scheduled completion date.
- time impact analysis:** A schedule and narrative report developed specifically to demonstrate what effect a proposed change or delay has on the current scheduled completion date.
- time-scaled network diagram:** A graphic depiction of a CPM schedule comprised of activity bars with relationships for each activity represented by arrows. The tail of each arrow connects to the activity bar for the predecessor and points to the successor.
- total float:** The amount of time that an activity or chain of activities can be delayed before extending the scheduled completion date.
- updated schedule:** A current schedule developed from the baseline or subsequent schedule through regular monthly review to incorporate as-built progress and any planned changes.

## Submittals

### General Requirements

Submit to the Engineer baseline, monthly updated, and final updated schedules, each consistent in all respects with the time and order of work requirements of the contract. Work must be executed in the sequence indicated on the current accepted schedule.

Schedules must show the order in which you propose to prosecute the work with logical links between time-scaled work activities and calculations made using the critical path method to determine the controlling activities. You are responsible for assuring that all activity sequences are logical and that each schedule shows a coordinated plan for complete performance of the work.

Produce schedules using computer software and submit compatible software for the Engineer's exclusive possession and use. Submit network diagrams and schedule data as parts of each schedule submittal.

Schedule activities must include the following:

1. Project characteristics, salient features, or interfaces, including those with outside entities, that could affect time of completion
2. Project start date, scheduled completion date, and other milestones
3. Work performed by you, your subcontractors, and suppliers

4. Submittal development, delivery, review, and approval, including those from you, your subcontractors, and suppliers
5. Procurement, delivery, installation, and testing of materials, plants, and equipment
6. Testing and settlement periods
7. Utility notification and relocation
8. Erection and removal of falsework and shoring
9. Major traffic stage switches
10. Finishing roadway and final cleanup
11. State-owned float as the predecessor activity to the scheduled completion date

Schedules must have not less than 50 and not more than 500 activities, unless otherwise authorized by the Engineer. The number of activities must be sufficient to assure adequate planning of the project, to permit monitoring and evaluation of progress, and to do an analysis of time impacts.

Schedule activities must include the following:

1. A clear and legible description.
2. Start and finish dates.
3. A duration of not less than one working day, except for event activities, and not more than 20 working days, unless otherwise authorized by the Engineer.
4. At least one predecessor and one successor activity, except for project start and finish milestones.
5. Required constraints. Constraints other than those required by the special provisions may be included only if authorized by the Engineer.
6. Codes for responsibility, stage, work shifts, location, and contract pay item numbers.

You may show early completion time on any schedule provided that the requirements of the contract are met. Early completion time is considered a resource for your exclusive use. You may increase early completion time by improving production, reallocating resources to be more efficient, performing sequential activities concurrently, or by completing activities earlier than planned. You may also submit for approval a cost reduction incentive proposal as specified in Section 5-1.14, "Cost Reduction Incentive," of the Standard Specifications that will reduce time of construction.

You may show a scheduled completion date that is later than the contract completion date on an update schedule, after the baseline schedule is accepted. Provide an explanation for a late scheduled completion date in the narrative report that is included with the schedule.

State-owned float is considered a resource for the exclusive use of the State. The Engineer may accrue State-owned float by the early completion of review of any type of required submittal when it saves time on the critical path. Prepare a time impact analysis, when requested by the Engineer, to determine the effect of the action as specified in "Time Impact Analysis." The Engineer documents State-owned float by directing you to update the State-owned float activity on the next updated schedule. Include a log of the action on the State-owned float activity and include a discussion of the action in the narrative report. The Engineer may use State-owned float to mitigate past, present, or future State delays by offsetting potential time extensions for contract change orders.

The Engineer may adjust contract working days for ordered changes that affect the scheduled completion date as specified in Section 4-1.03, "Changes," of the Standard Specifications. Prepare a time impact analysis to determine the effect of the change as specified in "Time Impact Analysis" and include the impacts acceptable to the Engineer in the next updated schedule. Changes that do not affect the controlling operation on the critical path will not be considered as the basis for a time adjustment. Changes that do affect the controlling operation on the critical path will be considered by the Engineer in decreasing time or granting an extension of time for completion of the contract. Time extensions will only be granted if the total float is absorbed and the scheduled completion date is delayed one or more working days because of the ordered change.

The Engineer's review and acceptance of schedules does not waive any contract requirements and does not relieve you of any obligation or responsibility for submitting complete and accurate information. Correct rejected schedules and resubmit corrected schedules to the Engineer within 7 days of notification by the Engineer, at which time a new review period of 7 days will begin.

Errors or omissions on schedules do not relieve you from finishing all work within the time limit specified for completion of the contract. If, after a schedule has been accepted by the Engineer, either you or the Engineer discover that any aspect of the schedule has an error or omission, you must correct it on the next updated schedule.

## **Computer Software**

Submit to the Engineer for review a description of proposed schedule software to be used. After the Engineer accepts the proposed software, submit schedule software and all original software instruction manuals. All software must be compatible with the current version of the Windows operating system in use by the Engineer. The schedule software must include:

1. Latest version of Primavera SureTrak Project Manager for Windows, or equivalent
2. Latest version of schedule-comparing HST SureChange, or equivalent

If a schedule software equivalent to SureTrak is proposed, it must be capable of generating files that can be imported into SureTrak. The schedule-comparing software must be compatible with schedule software submitted and must be able to compare two schedules and provide reports of changes in activity ID, activity description, constraints, calendar assignments, durations, and logic ties.

The schedule software and schedule-comparing software will be returned to you before the final estimate. The Department will compensate you as specified in Section 4-1.03, "Extra Work," of the Standard Specifications for replacement of software or manuals damaged, lost, or stolen after delivery to the Engineer.

Instruct the Engineer in the use of the software and provide software support until the contract is accepted. Within 15 days of contract approval, provide a commercial 8-hour training session for 2 Department employees in the use of the software at a location acceptable to the Engineer. It is recommended that you also send at least 2 employees to the same training session to facilitate development of similar knowledge and skills in the use of the software. If schedule software other than SureTrak is submitted, then the training session must be a total of 16-hours for each Department employee.

## **Network Diagrams, Reports, and Data**

Include the following with each schedule submittal:

1. Two sets of originally plotted, time-scaled network diagrams
2. Two copies of a narrative report
3. One read-only compact disk or floppy diskette containing the schedule data

The time-scaled network diagrams must conform to the following:

1. Show a continuous flow of information from left to right
2. Be based on early start and early finish dates of activities
3. Clearly show the primary paths of criticality using graphical presentation
4. Be prepared on 860 mm x 1120 mm (34" x 44")
5. Include a title block and a timeline on each page

The narrative report must be organized in the following sequence with all applicable documents included:

1. Transmittal letter
2. Work completed during the period
3. Identification of unusual conditions or restrictions regarding labor, equipment or material; including multiple shifts, 6-day work weeks, specified overtime or work at times other than regular days or hours
4. Description of the current critical path
5. Changes to the critical path and scheduled completion date since the last schedule submittal
6. Description of problem areas
7. Current and anticipated delays:
  - 7.1. Cause of delay
  - 7.2. Impact of delay on other activities, milestones, and completion dates
  - 7.3. Corrective action and schedule adjustments to correct the delay
8. Pending items and status thereof:
  - 8.1. Permits

- 8.2. Change orders
  - 8.3. Time adjustments
  - 8.4. Noncompliance notices
9. Reasons for an early or late scheduled completion date in comparison to the contract completion date

Schedule submittals will only be considered complete when all documents and data have been submitted as described above.

#### **Preconstruction Scheduling Conference**

Schedule a preconstruction scheduling conference with your project manager and the Engineer within 15 days after contract approval. The Engineer will conduct the meeting and review the requirements of this section with you.

Submit a general time-scaled logic diagram displaying the major activities and sequence of planned operations and be prepared to discuss the proposed work plan and schedule methodology that comply with the requirements of this section. If you propose deviations to the construction staging, then the general time-scaled logic diagram must also display the deviations and resulting time impacts. Be prepared to discuss the proposal.

At this meeting, also submit the alphanumeric coding structure and activity identification system for labeling work activities. To easily identify relationships, each activity description must indicate its associated scope or location of work by including such terms as quantity of material, type of work, bridge number, station to station location, side of highway (such as left, right, northbound, southbound), lane number, shoulder, ramp name, ramp line descriptor, or mainline.

The Engineer reviews the logic diagram, coding structure, and activity identification system, and provide any required baseline schedule changes to you for implementation.

#### **Baseline Schedule**

Beginning the week following the preconstruction scheduling conference, meet with the Engineer weekly to discuss schedule development and resolve schedule issues until the baseline schedule is accepted.

Submit to the Engineer a baseline schedule within 20 days of approval of the contract. Allow 20 days for the Engineer's review after the baseline schedule and all support data are submitted. In addition, the baseline schedule submittal is not considered complete until the computer software is delivered and installed for use in review of the schedule.

The baseline schedule must include the entire scope of work and how you plan to complete all work contemplated. The baseline schedule must show the activities that define the critical path. Multiple critical paths and near-critical paths must be kept to a minimum. A total of not more than 50 percent of the baseline schedule activities must be critical or near critical, unless otherwise authorized by the Engineer.

The baseline schedule must not extend beyond the number of contract working days. The baseline schedule must have a data date of contract approval. If you start work before contract approval, the baseline schedule must have a data date of the 1st day you performed work at the job site.

If you submit an early completion baseline schedule that shows contract completion in less than 85 percent of the contract working days, the baseline schedule must be supplemented with resource allocations for every task activity and include time-scaled resource histograms. The resource allocations must be shown to a level of detail that facilitates report generation based on labor crafts and equipment classes for you and your subcontractors. Use average composite crews to display the labor loading of on-site construction activities. Optimize and level labor to reflect a reasonable plan for accomplishing the work of the contract and to assure that resources are not duplicated in concurrent activities. The time-scaled resource histograms must show labor crafts and equipment classes to be used. The Engineer may review the baseline schedule activity resource allocations using Means Productivity Standards or equivalent to determine if the schedule is practicable.

#### **Updated Schedule**

Submit an updated schedule and meet with the Engineer to review contract progress, on or before the 1st day of each month, beginning one month after the baseline schedule is accepted. Allow 15 days for the Engineer's review after the updated schedule and all support data are submitted, except that the review period will not start until the previous month's required schedule is accepted. Updated schedules that are not accepted or rejected within the review period are considered accepted by the Engineer.

The updated schedule must have a data date of the 21st day of the month or other date established by the Engineer. The updated schedule must show the status of work actually completed to date and the work yet to be performed as planned. Actual activity start dates, percent complete, and finish dates must be shown as applicable. Durations for work that has been completed must be shown on the updated schedule as the work actually occurred, including Engineer submittal review and your resubmittal times.

You may include modifications such as adding or deleting activities or changing activity constraints, durations, or logic that do not (1) alter the critical path(s) or near critical path(s) or (2) extend the scheduled completion date compared to that shown on the current accepted schedule. Justify in writing the reasons for any changes to planned work. If any proposed changes in planned work will result in (1) or (2) above, then submit a time impact analysis as specified in this section.

### **Time Impact Analysis**

Submit a written time impact analysis (TIA) to the Engineer with each request for adjustment of contract time, or when you or the Engineer considers that an approved or anticipated change may impact the critical path or contract progress.

The TIA must illustrate the impacts of each change or delay on the current scheduled completion date or internal milestone, as appropriate. The analysis must use the accepted schedule that has a data date closest to and before the event. If the Engineer determines that the accepted schedule used does not appropriately represent the conditions before the event, the accepted schedule must be updated to the day before the event being analyzed. The TIA must include an impact schedule developed from incorporating the event into the accepted schedule by adding or deleting activities, or by changing durations or logic of existing activities. If the impact schedule shows that incorporating the event modifies the critical path and scheduled completion date of the accepted schedule, the difference between scheduled completion dates of the two schedules must be equal to the adjustment of contract time. The Engineer may construct and use an appropriate project schedule or other recognized method to determine adjustments in contract time until you provide the TIA.

Submit 2 copies of your TIA within 20 days of receiving a written request for a TIA from the Engineer. Allow the Engineer 15 days after receipt to review the submitted TIA. All approved TIA schedule changes must be shown on the next updated schedule.

If a TIA you submit is rejected, meet with the Engineer to discuss and resolve issues related to the TIA. If agreement is not reached, you are allowed 15 days from the meeting with the Engineer to give notice as specified in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications. Only show actual as-built work, not unapproved changes related to the TIA, in subsequent updated schedules. If agreement is reached at a later date, approved TIA schedule changes must be shown on the next updated schedule. The Engineer withholds remaining payment on the schedule contract item if a TIA is requested and not submitted within 20 days. The schedule item payment resumes on the next estimate after the requested TIA is submitted. No other contract payment is retained regarding TIA submittals.

### **Final Updated Schedule**

Submit a final update, as-built schedule with actual start and finish dates for the activities, within 30 days after completion of contract work. Provide a written certificate with this submittal signed by your project manager or an officer of the company stating, "To my knowledge and belief, the enclosed final update schedule reflects the actual start and finish dates of the actual activities for the project contained herein." An officer of the company may delegate in writing the authority to sign the certificate to a responsible manager.

### **PAYMENT**

Progress schedule (critical path method) will be paid for at a lump sum price. The contract lump sum price paid for progress schedule (critical path method) includes full compensation for furnishing all labor, material, tools, equipment, and incidentals, including computer software, and for doing all the work involved in preparing, furnishing, and updating schedules, and instructing and assisting the Engineer in the use of computer software, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Payments for the progress schedule (critical path method) contract item will be made progressively as follows:

1. A total of 25 percent of the item amount or a total of 25 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon achieving all of the following:

- 1.1. Completion of 5 percent of all contract item work.
  - 1.2. Acceptance of all schedules and approval of all TIAs required to the time when 5 percent of all contract item work is complete.
  - 1.3. Delivery of schedule software to the Engineer.
  - 1.4. Completion of required schedule software training.
2. A total of 50 percent of the item amount or a total of 50 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon completion of 25 percent of all contract item work and acceptance of all schedules and approval of all TIAs required to the time when 25 percent of all contract item work is complete.
  3. A total of 75 percent of the item amount or a total of 75 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon completion of 50 percent of all contract item work and acceptance of all schedules and approval of all TIAs required to the time when 50 percent of all contract item work is complete.
  4. A total of 100 percent of the item amount or a total of 100 percent of the amount listed for progress schedule (critical path method) in "Payments" of Section 5 of these special provisions, whichever is less, will be paid upon completion of all contract item work, acceptance of all schedules and approval of all TIAs required to the time when all contract item work is complete, and submittal of the certified final update schedule.

If you fail to complete any of the work or provide any of the schedules required by this section, the Engineer makes an adjustment in compensation as specified in Section 4-1.03C, "Changes in Character of Work," of the Standard Specifications for the work not performed. Adjustments in compensation for schedules will not be made for any increased or decreased work ordered by the Engineer in submitting schedules.

#### **10-1.14 OBSTRUCTIONS**

Attention is directed to Section 8-1.10, "Utility and Non-Highway Facilities," and Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

The Contractor shall still determine by potholing or other means the exact utility locations in advance of performing the Contract items of work especially placement of the drainage work.

If the Contractor while performing the Contract discovers utility facilities not identified by the Engineer in the Contract Plans or Specifications, the Contractor shall immediately notify the Engineer in writing. The Contractor shall schedule the project so as to allow the Engineer forty-eight (48) hours, excluding Saturdays, Sundays, and holidays, to determine the work to be done when a conflict exists. The County will not compensate the Contractor for idle equipment during potholing, nor will the County compensate the Contractor for right-of-way delays during the 48 hours allotted for a decision to be reached. Owner of the utility facility shall have the sole discretion to perform the repairs or relocation work itself, or to permit the Contractor to do such repairs or relocation work at a reasonable price. In the event that the utility owner permits the Contractor to perform the work, the work will be paid for by the County, via Force Account Change Order. Compensation to the Contractor for said cost shall be in accordance with Section 4215 of the Government Code and with Section 9-1.03, "Force Account Payment" of the Standard Specifications.

Nothing herein shall be construed to require the Utility Owner to locate the presence of any existing services not expressly included in Government Code Section 4125, nor limit the Owner's rights or remedies set forth therein.

The Contractor shall protect from damage existing utility and other non-highway facilities that are to remain in place. This protection may consist of shoring an existing utility. Damage due to the Contractor's failure to exercise reasonable care shall be repaired at his cost and expense.

Attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than 150 mm in diameter or pipelines operating at pressures greater than 415 kPa (gage); underground electric supply system conductors or cables, with potential to ground of more than 300 V, either directly buried or in a duct or conduit which do not have concentric grounded or other effectively grounded metal shields or sheaths.

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 2 business days, but not more than 14 days, prior to performing any excavation or

other work close to any underground pipeline, conduit, duct, wire or other structure. Regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert	811

The Contractor shall notify the following listed utility companies forty-eight (48) hours in advance of doing any work at the site of the project:

Underground Service Alert Phone: 811

El Dorado Irrigation District (EID): Brian Mueller  
 1-(530)-642-4029  
 2890 Mosquito Road  
 Placerville, CA 95667

Pacific Gas and Electric Company (PG&E): Brian Ritchie  
 1-(530) 621-7264 (24 Hr # 1-800-743-5000)  
 Fax 1-(530) 621-7258  
 4636 Missouri Flat Road  
 Placerville, CA 95667

AT&T (SBC): Carol Prince  
 1-(530) 888-2031  
 12824 Earhart Avenue  
 Auburn, CA 95602

Comcast - Cable TV: Steve Abelia  
 1-(916) 830-6757  
 1242 National Drive  
 Sacramento, CA 95834

Full compensation for working around said facilities, performing any necessary potholing and coordination of facility relocation shall be considered as included in the prices paid for the various contract items and no additional compensation will be allowed therefor.

It is anticipated that the following utility facilities will be relocated prior to the dates shown:

Utility	Location	Date
AT&T	"US50" Sta 151+40 Rt to 158+80 Rt	12-31-09

In the event that the utility facilities mentioned above are not removed or relocated by the date specified and, if in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by reason of the utility facilities not being removed or relocated by the date specified, the State will compensate the Contractor for the delays to the extent provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications, and not otherwise, except as provided in Section 8-1.10, "Utility and Non-Highway Facilities," of the Standard Specifications.

**10-1.15 REMOVAL OF ASBESTOS CONTAINING MATERIALS**

Asbestos containing materials (ACM), as defined in Section 1529, "Asbestos," of the Construction Safety Orders, Title 8, of the California Code of Regulations are suspected to be present in the structure proposed for demolition or renovation.

In compliance with Standard Specifications Section 7-1.01F, the Contractor shall notify the El Dorado County Air Quality Management District as required by the National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 61, Subpart M, California Health and Safety Code section 39658(b)(1), and the California Air Resources Board regulations. A copy of the notification form and attachments shall be provided to the Engineer

prior to submittal. Notification shall take place a minimum of 10 working days prior to starting demolition or renovation activities.

**ASBESTOS SURVEY**

Non-friable asbestos-containing material was detected in the bridge barrier metal element shims.

**REMOVAL OF ASBESTOS CONTAINING MATERIAL**

Removal and management of ACM shall be performed by a contractor who is registered pursuant to Section 6501.5 of the Labor Code and certified pursuant to Section 7058.6 of the Business and Professions Code. Asbestos removal shall conform to Cal/OSHA requirements in Title 8 Sections 1529 and 341. All friable material shall be removed in a manner that conforms to OSHA work practice requirements. All non-friable ACM shall be removed and handled to prevent breakage. Non-friable ACM such as asbestos cement pipe shall be disposed of to a landfill facility permitted to take regulated asbestos containing material. The removal of ACM encased in concrete or other similar structural material is not required prior to demolition, but such material shall be adequately wetted whenever exposed during demolition. Packaging, storage, transporting, and disposing of ACM, shall conform to Title 22, Division 4.5, Chapters 11, 12 and 13 of the California Code of Regulations. The handling, removal, transportation, and disposal of ACM shall result in no visible dust. The Contractor shall have a water truck available at all times while performing earthwork, excavation or demolition activities in work areas containing ACM.

Asbestos removal procedures shall include, but not be limited to:

- A. Installing asbestos warning signs at perimeters of abatement work areas.
  - B. Wetting asbestos materials with sprayers.
  - C. Containing large volumes of asbestos materials in disposal bins for temporary storage until removed from the site.
  - D. Providing manifests for waste disposal upon completion for the Engineer to sign.
  - E. Transporters registered to transport hazardous waste in the State of California in accordance with the provisions of Chapter 6.5, Division 20 of the Health and Safety Code and Title 22 of the California Code of Regulations, Division 4.5.
  - F. Disposing of asbestos materials at a permitted disposal facility, which accepts such materials.
  - G. Working in accordance with Federal, State, and Local requirements for asbestos work.
- All vehicles used to transport ACM shall be marked as specified below, or an equivalent warning:

**DANGER**

**ASBESTOS DUST HAZARD**

**AUTHORIZED PERSONNEL ONLY**

**Handling**

The Contractor shall comply with CCR Title 22, Division 4.5, Chapter 12, Article 3 requirements for the removal of material containing asbestos prior to and during demolition and alteration, and shall place such removed material in approved plastic containers (double ply, 0.006 in minimum thickness, plastic bags) with caution labels affixed to bags. Such caution labels shall have conspicuous, legible lettering, which spells out the following, or equivalent warning:

**CAUTION**

**CONTAINS ASBESTOS FIBERS**

**BREATHING ASBESTOS DUST MAY**

**CAUSE SERIOUS BODILY HARM**

At the option of the Contractor, the removed materials containing asbestos may be placed directly into a covered roll off or drop box, which shall have the same caution label, affixed on all sides.

**Transporting**

All haulers of Asbestos Containing material shall be currently registered with the State Department of Toxic Substances Control (DTSC), and shall have a U.S. Environmental Protection Agency Identification Number (U.S. EPA I.D. Number). All vehicles used to transport hazardous waste material shall have affixed to the vehicle a valid



Certificate of Compliance issued by DTSC. If a roll off or drop box is utilized, both the drop box and the transporting vehicle must have a valid Certificate of Compliance issued by DTSC.

#### **Disposal**

The Engineer will obtain the required EPA generator identification numbers, and will sign the hazardous waste manifests. The Contractor shall dispose of all hazardous waste containing asbestos at a disposal facility permitted to accept such material and that meets all the requirements specified by Federal, State, and Local regulations. The Contractor shall notify the proper authorities at the disposal site in advance of delivery of hazardous waste containing asbestos to the disposal site. The Contractor shall conduct additional sampling deemed necessary by the owner of the disposal facility for acceptance of the material. This sampling shall be at the Contractor's expense.

If, as determined by the Engineer, the disposal of asbestos in the project area delays the current controlling operation, the delay will be considered a right of way delay and the Contractor will be compensated for the delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

#### **ASBESTOS COMPLIANCE PLAN**

The Contractor shall prepare an Asbestos Compliance Plan (ACP) to prevent or minimize exposure to asbestos. Attention is directed to Title 8, California Code of Regulations, Construction Safety Orders, Section 5192 (b) and Section 1529, "Asbestos", Occupational Safety and Health Guidance Manual published by the National Institute of Occupational Safety and Health (NIOSH) and the USEPA for elements of the ACP. The ACP shall contain as a minimum but not be limited to: identification of key personnel for the project, job hazard analysis for work assignments, summary of risk assessment, personal protective equipment, delineation of work zones on-site, decontamination procedures, general safe work practices, security measures, emergency response plans and worker training. The ACP shall be approved by the Contractor's Certified Industrial Hygienist before submission to the Engineer for review and acceptance. The plan shall be submitted to the Engineer at least 15 working days prior to beginning work in areas containing or suspected to contain asbestos.

#### **TRAINING**

Prior to performing work in areas containing or suspected to contain asbestos, personnel who have no prior training or are not current in their training status, including State personnel, shall complete a safety training program provided by the Contractor, which meets the requirement of Title 8, California Code of Regulations, Section 1529 and Section 5192 (b)(4)(B), and 29 CFR 1910 and 1926. The Contractor shall provide a written certification of completion of safety training to the Engineer for trained personnel prior to performing work in areas containing or suspected to contain asbestos.

#### **EQUIPMENT AND MEDICAL SURVEILLANCE**

The Contractor shall provide personnel protective equipment, training, and medical surveillance required by the Contractor's Asbestos Compliance Plan to State personnel. The number of State personnel will be 3.

#### **PAYMENT**

The contract lump sum price paid for Asbestos Compliance Plan shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing the Asbestos Compliance Plan, including paying the Certified Industrial Hygienist, and for providing personal protective equipment, training and medical surveillance, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract lump sum price paid for asbestos containing material removal shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved, including removal of ACM, containment, transporting and disposal of asbestos containing materials, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.16 DUST CONTROL**

Dust control shall conform to the provisions in Section 10, "Dust Control," of the Standard Specifications, Rules 223, 223-1 and 223-2 (Dust Rules) of the Rules and Regulations of the El Dorado County Air Quality Management District (AQMD) and these special provisions.

Nothing in these special provisions shall be construed as relieving the Contractor of the responsibilities as set forth in Section 7, "Legal Relations and Responsibility" of the Standard Specifications.

The Dust Rules can be obtained from the AQMD, 2850 Fairlane Court, Placerville, CA, 95667, (530) 621-6662, and is available at:

The materials within the project limits are neither known nor suspected to contain naturally occurring asbestos and the project is not located within designated Naturally Occurring Asbestos Review Areas on the current El Dorado County Naturally Occurring Asbestos Review Area Map.

#### **FUGITIVE DUST CONTROL PLAN PREPARATION, APPROVAL AND AMENDMENTS**

Prior to the start of any work and within fifteen (15) working days after the award of the contract by the Board of Supervisors, the Contractor shall submit to the AQMD a site specific Fugitive Dust Control Plan/Fugitive Dust Plan (FDP) meeting the requirements of the Dust Rules approved by AQMD for all proposed work. The Contractor shall provide the Engineer with four (4) copies of the AQMD approved FDP prior to starting any work that may generate dust.

The Contractor shall prepare an amendment to the FDP when there is a change in construction activities or operations not included in the FDP, when the Contractor's activities or operations violate a condition of AQMD, or when directed by the Engineer. Amendments shall identify additional dust control practices or revised operations, including those areas or operations not identified in the initially approved FDP. Amendments to the FDP shall be prepared and submitted for review and approval within a time approved by the Engineer. At a minimum, the FDP shall be amended annually.

The Contractor shall keep one (1) copy of the approved FDP and approved amendments at the project site. The FDP shall be made available upon request by a representative of the AQMD, California Air Resource Board, United States Environmental Protection Agency, or Caltrans. Requests by the public shall be directed to the Engineer.

The Contractor shall provide all notices to the AQMD and create and maintain all records as required by Dust Rules. Copies of all related records shall be submitted to the Engineer within thirty (30) calendar days of completion of the work.

#### **DUST CONTROL**

The Contractor shall implement the measures contained in the FDP to control dust in accordance with Dust Rules, the Standard Specifications and these special provisions, and as directed by the Engineer.

The Contractor is advised that significant dust control measures will be required during construction operations. In order to mitigate dust, past projects have required extensive pre-wetting to depths of cuts, the use of a dedicated water truck for each piece of earthmoving equipment (e.g., scrapers, dozers, excavators, loaders, haul trucks, backhoes, compactors, graders, etc.), and the use of rock track out pads and wheel wash stations at all points of egress from unpaved construction areas. These examples are not necessarily the exact mitigation measures needed on this project; rather, they have been listed to provide an idea of the extensive nature of dust control activities that may be necessary. The dust control measures that will be required to mitigate dust may impact the Contractor's productivity during construction activities. All impacts to productivity are considered included in the Contractor's bid price for the associated items of work and no additional compensation will be allowed therefor.

The Contractor shall know and fully comply with applicable provisions of the Permits and all modifications thereto, Dust Rules, and Federal, State, and local regulations and requirements that govern the Contractor's operations. Attention is directed to Sections 7-1.01, "Laws to be Observed," and 7-1.12, "Indemnification and Insurance," of the Standard Specifications.

The Contractor shall be responsible for penalties assessed or levied on the Contractor or the Department as a result of the Contractor's failure to comply with the provisions in this section "Dust Control" including, but not limited to, compliance with the applicable provisions of the Permits, Dust Rules, and Federal, State and local regulations and requirements as set forth therein.

Penalties as used in this section, "Dust Control," shall include fines, penalties and damages, whether proposed, assessed, or levied against the Department or the Contractor by governmental agencies or as a result of citizen suits. Penalties shall also include payments made or costs incurred in settlement for alleged violations of the Permits, Dust

Rules, or applicable laws, regulations, or requirements. Costs incurred could include sums spent instead of penalties, in mitigation or to remediate or correct violations.

#### **RETENTION OF FUNDS**

Notwithstanding any other remedies authorized by law, the Department may retain money due the Contractor under the contract, in an amount determined by the Department, up to and including the entire amount of Penalties proposed, assessed, or levied as a result of the Contractor's violation of the Permits, Dust Rules, or Federal or State law, regulations or requirements. Funds may be retained by the Department until final disposition has been made as to the Penalties. The Contractor shall remain liable for the full amount of Penalties until such time as they are finally resolved with the entity seeking the Penalties.

Retention of funds for failure to conform to the provisions in this section, "Dust Control," shall be in addition to the other retention amounts required by the contract. The amounts retained for the Contractor's failure to conform to provisions in this section will be released for payment on the next monthly estimate for partial payment following the date when an approved FDCP has been implemented and maintained, and when dust has been adequately controlled, as determined by the Engineer.

When a regulatory agency identifies a failure to comply with the Permits and modifications thereto, Dust Rules, or other Federal, State or local requirements, the Department may retain money due the Contractor, subject to the following:

- A. The Department will give the Contractor thirty (30) days notice of the Department's intention to retain funds from partial payments which may become due to the Contractor prior to acceptance of the contract. Retention of funds from payments made after acceptance of the contract may be made without prior notice to the Contractor.
- B. No retention of additional amounts out of partial payments will be made if the amount to be retained does not exceed the amount being withheld from partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications.
- C. If the Department has retained funds, and it is subsequently determined that the County is not subject to the entire amount of the Costs and Liabilities assessed or proposed in connection with the matter for which the retention was made, the Department shall be liable for interest on the amount retained for the period of the retention. The interest rate payable shall be six percent (6%) per annum.

During the first estimate period that the Contractor fails to conform to the provisions in this section, "Dust Control," the Department may retain an amount equal to twenty five percent (25%) of the estimated value of the contract work performed.

The Contractor shall notify the Engineer immediately upon request from the regulatory agencies to enter, inspect, sample, monitor, or otherwise access the project site or the Contractor's records pertaining to dust control work. The Contractor and the Department shall provide copies of correspondence, notices of violation, enforcement actions or proposed fines by regulatory agencies to the requesting regulatory agency.

#### **PAYMENT**

The contract lump sum price paid for prepare fugitive dust plan shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in developing, preparing, obtaining approval, revising, and amending the FDP, for maintaining and submitting all dust control records, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

In the event naturally occurring asbestos is found within the project limits, the Contractor shall prepare an Asbestos Dust Mitigation Plan in accordance with the requirements of Rule 223-2 and implement dust control in accordance with the requirements of Rule 223-2. Preparing an Asbestos Dust Mitigation Plan will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

The cost of performing dust control shall be considered as included in various items of work and no additional compensation shall be allowed therefore.

### 10-1.17 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES

Flagging, signs, and temporary traffic control devices furnished, installed, maintained, and removed when no longer required shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Category 1 temporary traffic control devices are defined as small and lightweight (less than 45 kg) devices. These devices shall be certified as crashworthy by crash testing, crash testing of similar devices, or years of demonstrable safe performance. Category 1 temporary traffic control devices include traffic cones, plastic drums, portable delineators, and channelizers.

If requested by the Engineer, the Contractor shall provide written self-certification for crashworthiness of Category 1 temporary traffic control devices at least 5 days before beginning any work using the devices or within 2 days after the request if the devices are already in use. Self-certification shall be provided by the manufacturer or Contractor and shall include the following:

- A. Date,
- B. Federal Aid number (if applicable),
- C. Contract number, district, county, route and kilometer post of project limits,
- D. Company name of certifying vendor, street address, city, state and zip code,
- E. Printed name, signature and title of certifying person; and
- F. Category 1 temporary traffic control devices that will be used on the project.

The Contractor may obtain a standard form for self-certification from the Engineer.

Category 2 temporary traffic control devices are defined as small and lightweight (less than 45 kg) devices that are not expected to produce significant vehicular velocity change, but may cause potential harm to impacting vehicles. Category 2 temporary traffic control devices include barricades and portable sign supports.

Category 2 temporary traffic control devices shall be on the Federal Highway Administration's (FHWA) list of Acceptable Crashworthy Category 2 Hardware for Work Zones. This list is maintained by FHWA and can be located at:

[http://safety.fhwa.dot.gov/roadway\\_dept/road\\_hardware/listing.cfm?code=workzone](http://safety.fhwa.dot.gov/roadway_dept/road_hardware/listing.cfm?code=workzone)

The Department also maintains this list at:

<http://www.dot.ca.gov/hq/traffops/signtech/signdel/pdf/Category2.pdf>

Category 2 temporary traffic control devices that have not received FHWA acceptance shall not be used. Category 2 temporary traffic control devices in use that have received FHWA acceptance shall be labeled with the FHWA acceptance letter number and the name of the manufacturer. The label shall be readable and permanently affixed by the manufacturer. Category 2 temporary traffic control devices without a label shall not be used.

If requested by the Engineer, the Contractor shall provide a written list of Category 2 temporary traffic control devices to be used on the project at least 5 days before beginning any work using the devices or within 2 days after the request if the devices are already in use.

Category 3 temporary traffic control devices consist of temporary traffic-handling equipment and devices that weigh 45 kg or more and are expected to produce significant vehicular velocity change to impacting vehicles. Temporary traffic-handling equipment and devices include crash cushions, truck-mounted attenuators, temporary railing, temporary barrier, and end treatments for temporary railing and barrier.

Type III barricades may be used as sign supports if the barricades have been successfully crash tested, meeting the NCHRP Report 350 criteria, as one unit with a construction area sign attached.

Category 3 temporary traffic control devices shall be shown on the plans or on the Department's Highway Safety Features list. This list is maintained by the Division of Engineering Services and can be found at:

[http://www.dot.ca.gov/hq/esc/approved\\_products\\_list/HighwaySafe.htm](http://www.dot.ca.gov/hq/esc/approved_products_list/HighwaySafe.htm)

Category 3 temporary traffic control devices that are not shown on the plans or not listed on the Department's Highway Safety Features list shall not be used.

Full compensation for providing self-certification for crashworthiness of Category 1 temporary traffic control devices and for providing a list of Category 2 temporary traffic control devices used on the project shall be

considered as included in the prices paid for the various items of work requiring the use of the Category 1 or Category 2 temporary traffic control devices and no additional compensation will be allowed therefor.

**10-1.18 CONSTRUCTION AREA SIGNS**

Construction area signs for temporary traffic control shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Attention is directed to "Furnish Sign" of these special provisions.

Attention is directed to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. Type II retroreflective sheeting shall not be used on construction area sign panels. Type III, IV, VII, VIII, or IX retroreflective sheeting shall be used for stationary mounted construction area sign panels.

The Contractor shall furnish and erect two 450mm x 600mm (minimum size) California Integrated Waste Management Board Rubberized Asphalt Concrete (RAC) Grant funding signs at the locations shown on the plans or designated by the Engineer before starting major construction activities visible to highway users. The manufacturing details for these signs are included in the plans.

The Contractor shall furnish and erect 2006 State Transportation Bond Funding Identification / Local Funding signs at the locations shown on the plans or designated by the Engineer before starting major construction activities visible to highway users. The manufacturing details for these signs are included in the plans.

The Contractor shall furnish two 2134mm by 1829mm American Recovery and Reinvestment Act (ARRA) signs at the locations designated shown on the plans or designated by the Engineer before starting major construction activities visible to highway users. The manufacturing details for these signs are available at:

<http://www.dot.ca.gov/hq/traffops/signtech/signdel/bondfundspecs.htm>

On completion of the project, the Contractor shall remove and dispose of the 2006 State Transportation Bond Funding Identification /Local Funding, RAC and ARRA signs.

Unless otherwise shown on the plans or specified in these special provisions, the color of construction area warning and guide signs shall have black legend and border on orange background, except W10-1 or W47(CA) (Highway-Rail Grade Crossing Advance Warning) sign shall have black legend and border on yellow background.

Orange background on construction area signs shall be fluorescent orange.

Repair to construction area sign panels will not be allowed, except when approved by the Engineer. At nighttime under vehicular headlight illumination, sign panels that exhibit irregular luminance, shadowing or dark blotches shall be immediately replaced at the Contractor's expense.

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 business days, but not more than 14 days, prior to commencing excavation for construction area sign posts. The regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert	811

Excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes. The post hole diameter, if backfilled with portland cement concrete, shall be at least 100 mm greater than the longer dimension of the post cross-section.

Construction area signs, except those construction area signs placed on barricades, placed within 4.6 m from the edge of the travel way shall be mounted on stationary mounted sign supports as specified in "Construction Area Traffic Control Devices" of these special provisions.

The Contractor shall maintain accurate information on construction area signs. Signs that are no longer required shall be immediately covered or removed. Signs that convey inaccurate information shall be immediately replaced or the information shall be corrected. Covers shall be replaced when they no longer cover the signs properly. The Contractor shall immediately restore to the original position and location any sign that is displaced or overturned, from any cause, during the progress of work.

Full compensation for furnishing, erecting, maintaining, removing and disposing of the 2006 State Transportation Bond Funding Identification /Local Funding, RAC and ARRA signs shall be considered as included in the contract lump sum price paid for construction area signs and no additional compensation will be allowed therefore.

### 10-1.19 MAINTAINING TRAFFIC

Maintaining traffic shall conform to the provisions in Sections 7-1.08, "Public Convenience," Section 7-1.09, "Public Safety," and Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, "Public Safety" and "Portable Changeable Message Sign", of these special provisions and these special provisions.

Attention is directed to "Traffic Plastic Drums" of these special provisions regarding using plastic drums in place of portable delineators, cones or Type I or II barricades.

The Contractor shall cover signal heads, signs and other traffic control devices that may conflict with any detours. Full compensation for covering conflicting signal heads, signs and other traffic control devices shall be considered as included in the contract lump sum price paid for traffic control system and no additional compensation will be allowed therefor.

Closure is defined as the closure of a traffic lane or lanes, including shoulder, ramp or cross streets, within a single traffic control system.

Detours, lane, ramp, shoulder and cross street closures shall conform to Stage construction, Traffic handling and Detour plans and the provisions in "Traffic Control System for Lane Closure" of these special provisions

Except as noted herein, work that interferes with public traffic shall be limited to the hours when lane closures are allowed, except for work required under Sections 7-1.08, "Public Convenience," and Section 7-1.09, "Public Safety."

The full width of the traveled way shall be open for use by public traffic as shown in the table "Lane Closure Restriction for Designated Legal Holidays and Special Days" included in this section, "Maintaining Traffic."

Designated legal holidays are: January 1st, the third Monday in February, the last Monday in May, the second weekend in June, July 4th, the first Monday in September, November 11th, Thanksgiving Day, and December 25th. When a designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday. When November 11th falls on a Saturday, the preceding Friday shall be a designated legal holiday.

Under one-way reversing traffic control operations, public traffic may be stopped in one direction for periods not to exceed 10 minutes. After each stoppage, all accumulated traffic for that direction shall pass through the work zone before another stoppage is made.

The maximum length of a single stationary lane closure shall be 1.6 km.

Local authorities (including the California Highway Patrol (CHP), the City of Placerville Police Department, El Dorado County Sheriff's Department and local Fire and Emergency Response Units) shall be notified at least 10 business days before work begins. The Contractor shall cooperate with local authorities to handle traffic through the work area and shall make arrangements to keep the work area clear of parked vehicles. Further, the Contractor shall notify local authorities when a detour will be and is in effect and provide these agencies with a copy of the traffic handling plan sheets showing the detour a minimum of 5 calendar days prior to detouring traffic.

A portable changeable message sign shall be placed for each lane, shoulder or ramp closure, detour as shown on the plans and detour to preceding ramp or next ramp, prior to the first advance warning sign shown on the plans, unless otherwise directed by the Engineer.

Local street closures shall conform to the lane closure charts. Except as noted herein and as shown on the plans, not more than one ramp or street closure will be allowed at the same time unless directed by the Engineer.

Except as noted herein, no ramp shall be closed for any longer than one work shift.

The Eastbound (EB) on ramp from Missouri Flat Road to US-50 may be closed for one consecutive ten-day period. The on-ramp access may be closed starting at 9 p.m. on the first day. The first day of this closure shall be a Friday. The Contractor shall have access to the EB on-ramp from Missouri Flat Road open for use by public traffic no later than 5 a.m. on the 11<sup>th</sup> day. Detour must be in place. Once work that requires closure of the ramp has begun it shall be completed prior to opening it up to public traffic unless order by the Engineer.

The Westbound (WB) on ramp from Missouri Flat Road to US-50 may be closed for one consecutive seventeen-day period. The on-ramp access may be closed starting at 8 p.m. on the first day. The first day of this closure shall be a Friday. The Contractor shall have access to the WB on-ramp from Missouri Flat Road open for use by public traffic no later than 5 a.m. on the 18<sup>th</sup> day. Detour must be in place. Once work that requires closure of the ramp has begun it shall be completed prior to opening it up to public traffic unless order by the Engineer.

During the placement of bridge structural steel for both the Eastbound (EB) and Westbound (WB) Weber Creek Bridges of US 50 the Contractor may use reversible traffic controls with a freeway crossover for 8 periods of four (4) hours as detailed on Lane Closure Chart No. 8 over a period of two (2) weeks. The Missouri Flat Road on-ramp to EB US-50 and the Placerville Road/Forni Road on-ramp to WB US-50 shall be closed during the reversible traffic control.

During the jacking and lowering of both the Eastbound (EB) and Westbound (WB) Weber Creek Bridges of US 50 the Contractor may use reversible traffic controls with a freeway crossover for 20 periods of two (2) hours as detailed on Lane Closure Charts No. 8 & 9 for the seismic retrofitting of the Weber Creek Bridges in the EB and WB directions. The Missouri Flat Road on-ramp to EB US-50 and the Placerville Road/Forni Road on-ramp to WB US-50 shall be closed during the reversible traffic control.

The Contractor shall inform Caltrans Truck Services 15 calendar days prior to the proposed reversible traffic control operations so that truck operators may be properly informed of the activity.

During the Route 50 reversible traffic control periods for bridge jacking (See Lane Closure Charts No. 8 & 9) the Contractor shall provide access to permit loads on the first and third Monday and Tuesday of every month. The Contractor shall schedule his jacking operations such that the bridge is off the jacks and back on its bearing pads with the anchor bolts secured prior to 12:01 a.m. on the two Mondays.

SC6-3(CA) (RAMP CLOSED) sign shall be used to inform motorists of the temporary closing of an entrance ramp or exit ramp for 1 business day.

SC6-4(CA) (RAMP CLOSED) sign shall be used to inform motorists of the temporary closing of an entrance ramp or exit ramp for more than 1 business day.

The Contractor shall notify the Engineer 7 calendar days prior to closing a ramp. The SC6-3(CA) or SC6-4(CA) signs shall be installed at least 7 calendar days before closing the ramp, but not more than 15 calendar days before the ramp closure. The Contractor shall notify the Engineer at least 2 business days before installing the SC6-3(CA) or SC6-4(CA) signs.

Accurate information shall be maintained on the SC6-3(CA) or SC6-4(CA) signs. The SC6-3(CA) or SC6-4(CA) signs, when no longer required or as directed by the Engineer, shall be immediately covered or removed.

A portable changeable message sign shall be placed 7 days prior to a ramp closure as shown on the plans or as directed by the Engineer. When a ramp is closed, public traffic shall be detoured to the preceding ramp or next ramp as shown on the plans, or as directed by the Engineer. When portable changeable message signs are no longer required they shall be removed as directed by the Engineer.

During girder erection and jacking and lowering of existing bridges, reversible traffic control using a freeway crossover on Route 50 shall be as specified in Charts No. 8 & 9.

Personal vehicles of the Contractor's employees shall not be parked within the right of way.

On multilane highway, when work vehicles or equipment are parked within 1.8m of a traffic lane to perform active construction, the shoulder area shall be closed as shown on the plans.

If minor deviations from the lane requirement charts are required, a written request shall be submitted to the Engineer at least 15 days before the proposed date of the closure. The Engineer may approve the deviations if there is no significant increase in the cost to the State and if the work can be expedited and better serve the public traffic.

Full compensation for furnishing, erecting, maintaining, and removing and disposing of the C43(CA), SC6-3(CA), SC6-4(CA), W20-1, W21-5b, and C24(CA) signs shall be considered as included in the contract lump sum price paid for construction area signs and no additional compensation will be allowed therefor.

Furnishing, erecting, maintaining, and removing special portable detour signs (SC3) along the detour route not covered in the detour plans as directed by the Engineer will be paid for as extra work as provided in Section 4-1.03 of the Standard Specifications.

Lane Closure Restriction for Designated Legal Holidays and Special Days										
Thu	Fri	Sat	Sun	Mon	Tues	Wed	Thu	Fri	Sat	Sun
x	<b>H</b> xx	xx	xx							
	<b>SD</b> xx									
x	xx	<b>H</b> xx	xx							
		<b>SD</b> xx								
	x	xx	<b>H</b> xx	xx						
			<b>SD</b> xx							
	x	xx	xx	<b>H</b> xx						
	x	xx	xx	<b>SD</b> xx						
				x	<b>H</b> xx					
				x	<b>SD</b> xx					
					x	<b>H</b> xx				
						<b>SD</b> xx				
						x	<b>H</b> xx	xx	xx	xx
							<b>SD</b> xx			
Legends:										
	Refer to lane closure charts									
x	The full width of the traveled way shall be open for use by public traffic after 1400 hrs.									
xx	The full width of the traveled way shall be open for use by public traffic.									
xxx	The full width of the traveled way shall be opened for use by public traffic until 2200 hrs.									
<b>H</b>	Designated Legal Holiday									
<b>SD</b>	Special Day									

Pedestrian access facilities shall be provided through construction areas within the right of way as specified herein. Pedestrian walkways shall be surfaced with hot mix asphalt, portland cement concrete or timber. The surface shall be skid resistant and free of irregularities. Hand railings shall be provided on each side of pedestrian walkways as necessary to protect pedestrian traffic from hazards due to construction operations or adjacent vehicular traffic. The Contractor shall provide flaggers at all times that pedestrian facilities are not in place and operational.

Pedestrian facilities shall be provided during construction operations. At least one walkway shall be available at all times. If the Contractor's operations require the closure of one walkway, then another walkway shall be provided nearby, off the traveled roadway.

Railings shall be constructed of wood, S4S, and shall be painted white. Railings and walkways shall be maintained in good condition. Walkways shall be kept clear of obstructions.

Full compensation for providing pedestrian facilities shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.



Chart No. 1 Freeway/Expressway Lane Requirements																												
County: El Dorado					Route/Direction: 50/Eastbound					KP: 22.9/25.1					PM: 14.2/15.7													
Closure Limits: KP 23.4 to 25.1 (Missouri Flat Road OC)																												
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
Mondays through Thursdays		1	1	1	1	1	1																		1	1	1	
Fridays		1	1	1	1	1	1																			1	1	1
Saturdays		1	1	1	1	1	1	1	1																	1	1	1
Sundays		1	1	1	1	1	1	1	1	1																1	1	1
Legend:																												
1		Provide at least one through freeway lane, <u>a minimum of 3.4 m wide</u> , open in direction of travel																										
		Work permitted within project right of way where shoulder or lane closure is not required.																										
REMARKS:																												
<ul style="list-style-type: none"> <li>• Adjacent ramps may be closed during this closure.</li> <li>• <u>See Lane Closure Restriction for Designated Legal Holidays and Special Days Table in Maintain Traffic of these special provisions for additional closure restrictions.</u></li> </ul>																												

Chart No. 2 Freeway/Expressway Lane Requirements																													
County: El Dorado					Route/Direction: 50/Westbound					KP: 22.9/25.1					PM: 14.2/15.7														
Closure Limits: KP 23.4 to 25.1 (Missouri Flat Road OC)																													
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24			
Mondays through Thursdays		1	1	1	1	1																				1	1	1	
Fridays		1	1	1	1	1																					1	1	1
Saturdays		1	1	1	1	1	1	1	1																		1	1	1
Sundays		1	1	1	1	1	1	1	1	1																	1	1	1
Legend:																													
1		Provide at least one through freeway lane, <u>a minimum of 3.4 m wide</u> , open in direction of travel																											
		Work permitted within project right of way where shoulder or lane closure is not required.																											
REMARKS:																													
<ul style="list-style-type: none"> <li>• Adjacent ramps may be closed during this closure.</li> <li>• <u>See Lane Closure Restriction for Designated Legal Holidays and Special Days Table in Maintain Traffic of these special provisions for additional closure restrictions.</u></li> </ul>																													

Chart No. 3 Complete Ramp Closure Hours/Ramp Lane Requirements																														
County: El Dorado					Route/Direction: 50/Eastbound										KP: 22.9/25.1					PM: 14.2/15.7										
Closure Limits: EB On ramp from Missouri Flat Road																														
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
Mondays through Thursdays		C	C	C	C	C	C																			C	C	C		
Fridays		C	C	C	C	C	C																				C	C	C	
Saturdays		C	C	C	C	C	C	C	C																		C	C	C	C
Sundays		C	C	C	C	C	C	C	C																		C	C	C	C
Legend:																														
<input type="checkbox"/> C Ramp may be closed completely <input type="checkbox"/> Work permitted within project right of way where shoulder or lane closure is not required.																														
REMARKS:																														
<ul style="list-style-type: none"> <li>When ramp is closed detour must be in place as shown on the plans.</li> <li>Westbound on-ramp from Missouri Flat Road must be open.</li> <li>See Lane Closure Restriction for Designated Legal Holidays and Special Days Table in Maintain Traffic of these special provisions for additional closure restrictions.</li> </ul>																														

Chart No. 4 Complete Ramp Closure Hours/Ramp Lane Requirements																														
County: El Dorado					Route/Direction: 50/Westbound										KP: 22.9/25.1					PM: 14.2/15.7										
Closure Limits: WB On ramp from Missouri Flat Road																														
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
Mondays through Thursdays		C	C	C	C	C																					C	C	C	C
Fridays		C	C	C	C	C																					C	C	C	C
Saturdays		C	C	C	C	C	C	C	C																		C	C	C	C
Sundays		C	C	C	C	C	C	C	C																		C	C	C	C
Legend:																														
<input type="checkbox"/> C Ramp may be closed completely <input type="checkbox"/> Work permitted within project right of way where shoulder or lane closure is not required.																														
REMARKS:																														
<ul style="list-style-type: none"> <li>When ramp is closed detour must be in place as shown on the plans.</li> <li>Eastbound on-ramp from Missouri Flat Road must be open.</li> <li>See Lane Closure Restriction for Designated Legal Holidays and Special Days Table in Maintain Traffic of these special provisions for additional closure restrictions.</li> </ul>																														

Chart No. 5 Complete Ramp Closure Hours/Ramp Lane Requirements																										
County: El Dorado					Route/Direction: 50/Westbound										KP: 22.9/25.1					PM: 14.2/15.7						
Closure Limits: WB On ramp from Forni Road																										
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays		C	C	C	C	C	C																C	C	C	C
Fridays		C	C	C	C	C	C																C	C	C	C
Saturdays		C	C	C	C	C	C	C	C													C	C	C	C	C
Sundays		C	C	C	C	C	C	C	C	C												C	C	C	C	C
Legend:																										
<input type="checkbox"/> C		Ramp may be closed completely																								
<input type="checkbox"/>		Work permitted within project right of way where shoulder or lane closure is not required.																								
REMARKS:																										
<ul style="list-style-type: none"> <li>When ramp is closed detour must be in place as shown on plans.</li> <li>See Lane Closure Restriction for Designated Legal Holidays and Special Days Table in Maintain Traffic of these special provisions for additional closure restrictions.</li> </ul>																										

Chart No. 6 Complete Ramp Closure Hours/Ramp Lane Requirements																										
County: El Dorado					Route/Direction: 50/Eastbound										KP: 22.9/25.1					PM: 14.2/15.7						
Closure Limits: EB Off ramp to Forni Road																										
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays		C	C	C	C	C	C																C	C	C	C
Fridays		C	C	C	C	C	C																C	C	C	C
Saturdays		C	C	C	C	C	C	C	C													C	C	C	C	C
Sundays		C	C	C	C	C	C	C	C	C												C	C	C	C	C
Legend:																										
<input type="checkbox"/> C		Ramp may be closed completely																								
<input type="checkbox"/>		Work permitted within project right of way where shoulder or lane closure is not required.																								
REMARKS:																										
<ul style="list-style-type: none"> <li>When ramp is closed detour must be in place as shown on plans.</li> <li>See Lane Closure Restriction for Designated Legal Holidays and Special Days Table in Maintain Traffic of these special provisions for additional closure restrictions.</li> </ul>																										

**Chart No. 7  
Lane Requirements**

County: El Dorado	Route/Direction: Route 50	KP: 22.9/25.1	PM: 14.2/15.7
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Closure Limits: Missouri Flat Road

FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	1	1	1	1	1																			1	1
Fridays	1	1	1	1	1																			1	1
Saturdays	1	1	1	1	1	1																	1	1	1
Sundays	1	1	1	1	1	1																	1	1	1

**Legend:**

1	Provide at least two paved through traffic lanes open for use by public traffic. (One lane not less than 3.3 m wide in each direction of travel.)
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	No work that interferes with public traffic will be allowed.
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**REMARKS:**

**Chart No. 8  
Freeway/Expressway Lane Requirements**

County: El Dorado	Route/Direction: 50/ Eastbound & Westbound	KP: 22.9/25.1	PM: 14.2/15.7																							
Closure Limits: KP 23.9 to 24.7 (Weber Creek Bridge Widening and Seismic Retrofitting)																										
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Mondays through Thursdays	R	R	R	R	R																					R
Fridays	R	R	R	R	R																					R
Saturdays	R	R	R	R	R																					R
Sundays	R	R	R	R	R																					R
Day before designated legal holiday & designated legal holidays																										

Legend:

R Reversible Traffic Control using a Freeway Crossover with a pilot car is allowed.

No Reversible Traffic Control using a Freeway Crossover is permitted.

- REMARKS:
- This chart may be used during girder erection and jacking and lowering of the existing bridges.
  - This chart may be used a maximum of 8 times of four (4) hour windows for girder erection and a maximum of 20 times of two (2) hour windows for jacking and lowering of the existing bridge.
  - If the Contractor elects to use Chart 9 requirements then the maximum number of 20 times of two (2) hours windows in this chart for jacking and lowering of the existing bridges shall be reduced to a maximum of 16 times of two (2) hour windows.
  - The specified ramps shall be closed and the required detours must be in place per either Sheet DE-5 or DE-6.
  - Traffic shall be guided through the reversing traffic control detour in a single file platoon by a Pilot Car.
  - Permit loads shall have full access across Weber Creek Bridge on the first and third Monday and Tuesday of every month during which the existing bridge shall not be on jacks .
  - End of Queue Warning shall be provided from 2300 hour to 0400 hours during this Reversible Traffic Control using a Freeway Crossover.
  - See Lane Closure Restriction for Designated Legal Holidays and Special Days Table in Maintain Traffic of these special provisions for additional closure restrictions.

Chart No. 9 Freeway/Expressway Lane Requirements																										
County: El Dorado					Route/Direction: 50/ Eastbound & Westbound					KP: 22.9/25.1					PM: 14.2/15.7											
Closure Limits: KP 23.9 to 24.7 (Weber Creek Bridge Seismic Retrofitting)																										
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Mondays through Thursdays																										
Fridays																										
Saturdays					R	R	R	R																		
Sundays						R	R	R	R																	
Day before designated legal holiday & designated legal holidays																										
Legend:																										
<input type="checkbox"/> R <u>Reversible Traffic Control using a Freeway Crossover with a pilot car is allowed.</u>																										
<input type="checkbox"/> <u>No Reversible Traffic Control using a Freeway Crossover is permitted.</u>																										
REMARKS:																										
<ul style="list-style-type: none"> <li>• This chart may be used during the jacking of the existing bridges only.</li> <li>• This chart may be used a maximum of 4 times of two (2) hour windows for jacking of the existing bridges.</li> <li>• <u>The specified ramps shall be closed and the required detours must be in place per either Sheet DE-5 or DE-6.</u></li> <li>• Traffic shall be guided through the reversing traffic control detour in a single file platoon by a Pilot Car.</li> <li>• <u>Permit loads shall have full access across Weber Creek Bridge on the first and third Monday and Tuesday of every month during which the existing bridge shall not be on jacks.</u></li> <li>• <u>End of Queue Warning shall be provided from 2200 hour to 0400 hours during this Reversible Traffic Control using a Freeway Crossover.</u></li> <li>• <u>See Lane Closure Restriction for Designated Legal Holidays and Special Days Table in Maintain Traffic of these special provisions for additional closure restrictions.</u></li> </ul>																										

**10-1.20 CLOSURE REQUIREMENTS AND CONDITIONS**

Lane, ramp and cross street closures shall conform to the provisions in "Maintaining Traffic" of these special provisions and these special provisions.

**CLOSURE SCHEDULE**

A written schedule of planned closures for the next week period, defined as Sunday noon through the following Sunday noon, shall be submitted by noon each Monday. A written schedule shall be submitted not less than 25 days and not more than 125 days before the anticipated start of any operation that will:

1. Reduce horizontal clearances, traveled way, including shoulders, to two lanes or less due to such operations as temporary barrier placement and paving

2. Reduce the vertical clearances available to the public due to such operations as pavement overlay, overhead sign installation, or falsework or girder erection

The Closure Schedule shall show the locations and times of the proposed closures. The Closure Schedule request forms furnished by the Engineer shall be used. Closure Schedules submitted to the Engineer with incomplete or inaccurate information will be rejected and returned for correction and resubmittal. The Contractor will be notified of disapproved closures or closures that require coordination with other parties as a condition of approval.

Closure Schedule amendments, including adding additional closures, shall be submitted by noon to the Engineer, in writing, at least 3 business days in advance of a planned closure. Approval of Closure Schedule amendments will be at the discretion of the Engineer.

The Engineer shall be notified of cancelled closures 2 business days before the date of closure.

Closures that are cancelled due to unsuitable weather may be rescheduled at the discretion of the Engineer.

### CONTINGENCY PLAN

A detailed contingency plan shall be prepared for reopening closures to public traffic. If required by "Beginning of Work, Time of Completion and Liquidated Damages" of these special provisions, the contingency plan shall be submitted to the Engineer before work at the job site begins. Otherwise, the contingency plan shall be submitted to the Engineer for approval prior to the reversible traffic control activities on Route 50. The reversible traffic control activities on Route 50 shall not be started until the contingency plan has been approved by the Engineer.

### LATE REOPENING OF CLOSURES

If a closure is not reopened to public traffic by the specified time, work shall be suspended in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. No further closures are to be made until the Engineer has accepted a work plan, submitted by the Contractor, that will insure that future closures will be reopened to public traffic at the specified time. The Engineer will have 2 business days to accept or reject the Contractor's proposed work plan. The Contractor will not be entitled to compensation for the suspension of work resulting from the late reopening of closures.

For each 10-minute interval, or fraction thereof past the time specified to reopen the closure, the Department will deduct the amount per interval shown below from moneys due or that may become due the Contractor under the contract. Damages are limited to 5 percent of project cost per occurrence and will not be assessed when the Engineer requests that the closure remain in place beyond the scheduled pickup time.

Type of Facility	Route or Segment	Period	Damages/interval (\$)
Mainline	Route 50 Complete Direction Closure	1st half hour	\$3,000 / 10 minutes
		2nd half hour	\$4,500 / 10 minutes
		2nd hour and beyond	\$6,000 / 10 minutes
Mainline	Route 50 Lane Closure	1st half hour	\$1,050 / 10 minutes
		2nd half hour	\$1,575/ 10 minutes
		2nd hour and beyond	\$2,100/ 10 minutes
Ramps	Route 50	1st half hour	\$1,000 / 10 minutes
		2nd half hour	\$1,000/ 10 minutes
		2nd hour and beyond	\$1,000/ 10 minutes
Missouri Flat Road	All Closures	1st half hour	\$1,000 / 10 minutes
		2nd half hour	\$1,000/ 10 minutes
		2nd hour and beyond	\$1,000/ 10 minutes

### COMPENSATION

The Engineer shall be notified of delays in the Contractor's operations due to the following conditions, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of those conditions, and the Contractor's loss due to that delay could not have been avoided by rescheduling the affected closure or by judicious handling of forces, equipment and plant, the delay will be considered a right of way delay and will be compensated in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications:

1. The Contractor's proposed Closure Schedule is denied and his planned closures are within the time frame allowed for closures in "Maintaining Traffic" of these special provisions, except that the Contractor will not be entitled to compensation for amendments to the Closure Schedule that are not approved.
2. The Contractor is denied a confirmed closure.

Should the Engineer direct the Contractor to remove a closure before the time designated in the approved Closure Schedule, delay to the Contractor's schedule due to removal of the closure will be considered a right of way delay and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

### **10-1.21 IMPACT ATTENUATOR VEHICLE**

#### **GENERAL**

##### **Summary**

Work includes protecting traffic and workers by using impact attenuator vehicle as a shadow vehicle when placing and removing components of a traffic control system, and when performing a moving lane closure.

Comply with Section 12-3.03, "Flashing Arrow Signs," of the Standard Specifications.

Impact attenuator vehicle must comply with the following test levels under National Cooperative Highway Research Program 350:

1. Test level 3 for pre-construction posted speed limit of 80 km/hr or more
2. Test levels 2 or 3 for pre-construction posted speed limit of 70 km/hr or less

Comply with the attenuator manufacturer's recommendations for:

1. Support truck
2. Trailer-mounted operation
3. Truck-mounted operation

##### **Definitions**

**impact attenuator vehicle:** Support truck towing a deployed attenuator mounted to a trailer or support truck with a deployed attenuator mounted to the support truck.

##### **Submittals**

Upon request, submit a Certificate of Compliance for attenuator to the Engineer under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

##### **Quality Control and Assurance**

Attenuator must be a brand listed on the Department's pre-approved list at:

[http://www.dot.ca.gov/hq/esc/approved\\_products\\_list/HighwaySafe.htm](http://www.dot.ca.gov/hq/esc/approved_products_list/HighwaySafe.htm)

#### **MATERIALS**

The combined mass of the support truck and the attenuator must be at least 9000 kg, except the mass of the support truck must not be less than 7300 kg or greater than 12000 kg.

If using the Trinity MPS-350 truck-mounted attenuator, the support truck must not have any underneath fuel tank mounted within 3.2 m of the rear of the support truck.

Each impact attenuator vehicle must:

1. Have standard brake lights, taillights, sidelights, and turn signals
2. Have an inverted "V" chevron pattern placed across the entire rear of the attenuator composed of alternating 100 mm wide non-reflective black stripes and 100 mm wide yellow retroreflective stripes sloping at 45 degrees
3. Have a Type II flashing arrow sign
4. Have a flashing or rotating amber light
5. Have an operable 2-way communication system for maintaining contact with workers



## **CONSTRUCTION**

Use impact attenuator vehicle to follow behind equipment and workers who are placing and removing components of a traffic control system for a lane closure or a ramp closure. Flashing arrow sign must be operating in arrow mode during this activity. Follow at a distance to prevent intrusion into the workspace from passing traffic.

After placing components of a traffic control system for a lane closure or a ramp closure you may use impact attenuator vehicle in a closed lane and in advance of a work area to protect traffic and workers.

Use impact attenuator vehicle as a shadow vehicle under traffic control for a moving lane closure.

Secure objects including equipment, tools and ballast on impact attenuator vehicle to prevent loosening upon impact by an errant vehicle.

Do not use a damaged attenuator in the work. Replace, at your expense, an attenuator damaged from an impact during work.

## **MEASUREMENT AND PAYMENT**

Full compensation for furnishing and operating impact attenuator vehicle is included in the contract lump sum price paid for traffic control system, and no additional compensation will be allowed therefor.

### **10-1.22 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE**

A traffic control system shall consist of closing traffic lanes and ramps in conformance with the details shown on the plans, the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, the provisions under "Maintaining Traffic" and "Construction Area Signs" of these special provisions, and these special provisions.

The provisions in this section will not relieve the Contractor of responsibility for providing additional devices or taking measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

Overhead lighting shall be provided to illuminate flaggers from dusk to dawn and as required by the Engineer.

During traffic stripe operations and pavement marker placement operations using bituminous adhesive, traffic shall be controlled, at the option of the Contractor, with either stationary or moving lane closures. During other operations, traffic shall be controlled with stationary lane closures. Attention is directed to the provisions in Section 84-1.04, "Protection From Damage," and Section 85-1.06, "Placement," of the Standard Specifications.

If components in the traffic control system are displaced or cease to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the components to the original condition or replace the components and shall restore the components to the original location.

When reversible traffic control using a freeway crossover is applied on US-50 closed the Contractor shall utilize a pilot car to guide traffic through the work zone in a single file platoon. The pilot car shall have radio contact with personnel in the work area. The maximum speed of the pilot car through the traffic control zone shall be 40 kilometers per hour (25 mph).

Flaggers shall be required at the following locations when all detours are in effect:

Intersection of Green Valley Road and El Dorado Road  
Intersection of Green Valley Road and Placerville Drive  
Green Valley Road at Weber Creek Bridge

## **STATIONARY LANE CLOSURE**

When lane and ramp closures are made for work periods only, at the end of each work period, components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations, designated by the Engineer within the limits of the highway right of way.

Each vehicle used to place, maintain and remove components of a traffic control system on multilane highways shall be equipped with a radio, a cellular phone and a Type II flashing arrow sign which shall be in operation when the vehicle is being used for placing, maintaining or removing the components. Vehicles equipped with Type II flashing arrow sign not involved in placing, maintaining or removing the components when operated within a stationary type lane closure shall only display the caution display mode. The sign shall be controllable by the operator of the vehicle while the vehicle is in motion. The flashing arrow sign shown on the plans shall not be used on the vehicles which are doing the placing, maintaining and removing of components of a traffic control system and shall be in place before a lane closure requiring the sign's use is completed.

The traffic cones shown to be placed transversely across closed traffic lanes and shoulders on the plans entitled "Traffic Control System for Lane Closures on Freeways and Expressways" and "Traffic Control System for Lane and Complete Closures on Freeways and Expressways" shall not be placed.

### **MOVING LANE CLOSURE**

Flashing arrow signs used in moving lane closures shall be truck-mounted. Changeable message signs used in moving lane closure operations shall conform to the provisions in Section 12-3.12, "Portable Changeable Message Signs," of the Standard Specifications, except the signs shall be truck-mounted and the full operation height of the bottom of the sign may be less than 2.1 m above the ground, but should be as high as practicable.

Truck-mounted attenuators (TMA) for use in moving lane closures shall be any of the following approved models, or equal:

1. Hexfoam TMA Series 3000, Alpha 1000 TMA Series 1000, and Alpha 2001 TMA Series 2001, manufactured by Energy Absorption Systems, Inc., 35 East Wacker Drive, Suite 1100, Chicago, IL 60601:
  - 1.1. Northern California: Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, telephone (800) 884-8274, FAX (916) 387-9734
  - 1.2. Southern California: Traffic Control Service, Inc., 1818 E. Orangethorpe, Fullerton, CA 92831-5324, telephone (800) 222-8274, FAX (714) 526-9501
2. Cal T-001 Model 2 or Model 3, manufacturer and distributor: Hexcel Corporation, 11711 Dublin Boulevard, P.O. Box 2312, Dublin, CA 94568, telephone (925) 551-4900
3. Renco Rengard Model Nos. CAM 8-815 and RAM 8-815, manufacturer and distributor: Renco Inc., 1582 Pflugerville Loop Road, P.O. Box 730, Pflugerville, TX 78660-0730, telephone (800) 654-8182

Each TMA shall be individually identified with the manufacturer's name, address, TMA model number, and a specific serial number. The names and numbers shall each be a minimum 13 mm high and located on the left (street) side at the lower front corner. The TMA shall have a message next to the name and model number in 13 mm high letters which states, "The bottom of this TMA shall be \_\_\_\_\_ mm  $\pm$  \_\_\_\_\_ mm above the ground at all points for proper impact performance." Any TMA which is damaged or appears to be in poor condition shall not be used unless recertified by the manufacturer. The Engineer shall be the sole judge as to whether used TMAs supplied under this contract need recertification. Each unit shall be certified by the manufacturer to meet the requirements for TMA in conformance with the standards established by the Transportation Laboratory.

Approvals for new TMA designs proposed as equal to the above approved models shall be in conformance with the procedures (including crash testing) established by the Transportation Laboratory. For information regarding submittal of new designs for evaluation contact: Transportation Laboratory, 5900 Folsom Boulevard, Sacramento, California 95819.

New TMAs proposed as equal to approved TMAs or approved TMAs determined by the Engineer to need recertification shall not be used until approved or recertified by the Transportation Laboratory.

### **PAYMENT**

The contract lump sum price paid for traffic control system shall include full compensation for furnishing all labor (except for flagging costs), materials (including signs), tools, equipment, and incidentals (including overhead lighting, cellular phones, radios and pilot car), and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing and disposing of the components of the traffic control system shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer. Flagging costs will be paid for as provided in Section 12-2.02, "Flagging Costs," of the Standard Specifications.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications shall not apply to the item of traffic control system. Adjustments in compensation for traffic control system will be made only for increased or decreased traffic control system required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased traffic control necessary. The adjustment will be made on a force account basis as provided in Section 9-1.03, "Force Account Payment," of the Standard Specifications for increased work and estimated on the same basis in the case of decreased work.

Traffic control system required by work which is classed as extra work, as provided in Section 4-1.03D of the Standard Specifications, will be paid for as a part of the extra work.

### **10-1.23 TEMPORARY PAVEMENT DELINEATION**

Temporary pavement delineation shall be furnished, placed, maintained, and removed in conformance with the provisions in Section 12-3.01, "General," of the Standard Specifications and these special provisions. Nothing in these special provisions shall be construed as reducing the minimum standards specified in the California MUTCD or as relieving the Contractor from the responsibilities specified in Section 7-1.09, "Public Safety," of the Standard Specifications.

#### **GENERAL**

When the work causes obliteration of pavement delineation, temporary or permanent pavement delineation shall be in place before opening the traveled way to public traffic. Laneline or centerline pavement delineation shall be provided for traveled ways open to public traffic. On multilane roadways (freeways and expressways) edgeline delineation shall be provided for traveled ways open to public traffic.

The Contractor shall perform the work necessary to establish the alignment of temporary pavement delineation, including required lines or markers. Surfaces to receive application of paint temporary pavement delineation shall be dry and free of dirt and loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary pavement delineation. Temporary pavement delineation shall be maintained until superseded or replaced with a new pattern of temporary pavement delineation or permanent pavement delineation, or as determined by the Engineer.

Temporary pavement markers, including underlying adhesive, that are applied to the final layer of surfacing or existing pavement to remain in place or that conflicts with a subsequent or new traffic pattern for the area shall be removed when no longer required for the direction of public traffic, as determined by the Engineer.

#### **TEMPORARY LANELINE AND CENTERLINE DELINEATION**

When lanelines or centerlines are obliterated and temporary pavement delineation to replace the lines is not shown on the plans, the minimum laneline and centerline delineation to be provided for that area shall be temporary pavement markers placed at longitudinal intervals of not more than 7.3 m. The temporary pavement markers shall be the same color as the laneline or centerline the pavement markers replace. Temporary pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers listed for short term day/night use (14 days or less) or long term day/night use (180 days or less) in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. The temporary pavement markers shall be placed in conformance with the manufacturer's instructions. Temporary pavement markers for long term day/night use (180 days or less) shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place the temporary pavement markers in areas where removal of the temporary pavement markers will be required.

Temporary laneline or centerline delineation consisting entirely of temporary pavement markers listed for short term day/night use (14 days or less), shall be placed on longitudinal intervals of not more than 7.3 m and shall be used for a maximum of 14 days on lanes opened to public traffic. Before the end of the 14 days the permanent pavement delineation shall be placed. If the permanent pavement delineation is not placed within the 14 days, the Contractor shall replace the temporary pavement markers and provide additional temporary pavement delineation and shall bear the cost thereof. The additional temporary pavement delineation to be provided shall be equivalent to the pattern specified for the permanent pavement delineation for the area, as determined by the Engineer.

Where "no passing" centerline pavement delineation is obliterated, the following "no passing" zone signing shall be installed before opening the lanes to public traffic. W20-1 (ROAD WORK AHEAD) signs shall be installed from 300 m to 600 m in advance of "no passing" zones. R4-1 (DO NOT PASS) signs shall be installed at the beginning and at every 600-m interval within "no passing" zones. For continuous zones longer than 3 km, W7-3a or W71(CA) (NEXT \_\_\_\_ MILES) signs shall be installed beneath the W20-1 signs installed in advance of "no passing" zones. R4-2 (PASS WITH CARE) signs shall be installed at the end of "no passing" zones. The exact location of "no passing" zone signing will be as determined by the Engineer and shall be maintained in place until permanent "no passing" centerline pavement delineation has been applied. The signing for "no passing" zones, shall be removed when no longer required for the direction of public traffic. The signing for "no passing" zones shall conform to the provisions in "Construction Area Signs" of these special provisions, except for payment.

## **TEMPORARY EDGELINE DELINEATION**

On multilane roadways (freeways and expressways), when edgelines are obliterated and temporary pavement delineation to replace those edgelines is not shown on the plans, the edgeline delineation to be provided for those areas adjacent to lanes open to public traffic shall be as follows:

1. Temporary pavement delineation for right edgelines shall, at the option of the Contractor, consist of either paint of the same color as the stripe it replaces, traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 30 m.
2. Temporary pavement delineation for left edgelines shall, at the option of the Contractor, consist of either paint of the same color as the stripe it replaces, traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 30 m or temporary pavement markers placed at longitudinal intervals of not more than 1.8 m.

The lateral offset for traffic cones, portable delineators or channelizers used for temporary edgeline delineation shall be as determined by the Engineer. If traffic cones or portable delineators are used as temporary pavement delineation for edgelines, the Contractor shall provide personnel to remain at the project site to maintain the cones or delineators during the hours of the day that the portable delineators are in use.

Channelizers used for temporary edgeline delineation shall be the surface mounted type and shall be orange in color. Channelizer bases shall be cemented to the pavement in the same manner provided for cementing pavement markers to pavement in "Pavement Markers" of these special provisions, except epoxy adhesive shall not be used to place channelizers on the top layer of pavement. Channelizers shall be, at the Contractor's option, one of the surface mount types (900 mm) listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Temporary edgeline delineation shall be removed when no longer required for the direction of public traffic as determined by the Engineer.

## **TEMPORARY TRAFFIC STRIPE (PAINT)**

The painted temporary traffic stripe shall be complete in place at the location shown before opening the traveled way to public traffic. Removal of painted temporary traffic stripe will not be required except where shown on the plans.

Temporary painted traffic stripe shall conform to the provisions in "Paint Traffic Stripe and Pavement Marking" of these special provisions, except for payment. At the option of the Contractor, either one or 2 coats shall be applied regardless of whether on new or existing pavement. Paint shall not be used on the final lift.

## **TEMPORARY PAVEMENT MARKING (PAINT)**

Temporary pavement marking consisting of painted pavement marking shall be applied and maintained at the locations shown on the plans. The painted temporary pavement marking shall be complete in place at the location shown before opening the traveled way to public traffic. Removal of painted temporary pavement marking will not be required except where shown on the plans.

Temporary painted pavement marking shall conform to the provisions in "Paint Traffic Stripe and Pavement Marking" of these special provisions, except for payment. At the option of the Contractor, either one or 2 coats shall be applied regardless whether on new or existing pavement. Paint shall not be used on the final lift.

## **TEMPORARY PAVEMENT MARKERS**

Temporary pavement markers shall be applied complete in place before opening the traveled way to public traffic.

Temporary pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers for long term day/night use (180 days or less) listed in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Temporary pavement markers shall be placed in conformance with the manufacturer's instructions and shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used in areas where removal of the pavement markers will be required.

Retroreflective pavement markers conforming to the provisions in "Pavement Markers" of these special provisions may be used in place of temporary pavement markers for long term day/night use (180 days or less) except to simulate patterns of broken traffic stripe. Placement of the retroreflective pavement markers used for

temporary pavement markers shall conform to the provisions in "Pavement Markers" of these special provisions except the waiting period provisions before placing the pavement markers on new hot mix asphalt surfacing as specified in Section 85-1.06, "Placement," of the Standard Specifications shall not apply and epoxy adhesive shall not be used to place pavement markers in areas where removal of the pavement markers will be required.

#### **MEASUREMENT AND PAYMENT**

Full compensation for removing traffic stripe (paint) shall be considered as included in the contract price paid per meter for temporary traffic stripe (paint) and no separate payment will be made therefor.

Full compensation for removing painted pavement markings shall be considered as included in the contract price paid per square meter for temporary pavement marking (paint) and no separate payment will be made therefor.

Temporary pavement markers shown on the plans will be measured and paid for by the unit in the same manner specified for retroreflective pavement markers in Section 85-1.08, "Measurement," and Section 85-1.09, "Payment," of the Standard Specifications.

Full compensation for furnishing, placing, maintaining, and removing the temporary pavement markers (including underlying adhesive, layout (dribble) lines to establish alignment of temporary pavement markers or used for temporary laneline and centerline delineation and signing specified for "no passing" zones) for those areas where temporary laneline and centerline delineation is not shown on the plans and for providing equivalent patterns of permanent traffic lines for those areas when required, shall be considered as included in the contract prices paid for the items of work that obliterated the laneline and centerline pavement delineation and no separate payment will be made therefor.

Full compensation for furnishing, placing, maintaining, and removing temporary edgeline delineation not shown on the plans shall be considered as included in the contract prices paid for the items of work that obliterated the edgeline pavement delineation and no separate payment will be made therefor. The quantity of channelizers used as temporary edgeline delineation will not be included in the quantity of channelizer (surface mounted) to be paid for.

#### **10-1.24 BARRICADE**

Barricades shall be furnished, placed and maintained at the locations shown on the plans, specified in the Standard Specifications or in these special provisions or where designated by the Engineer. Barricades shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Attention is directed to "Prequalified and Tested Signing and Delineation Materials" of these special provisions regarding retroreflective sheeting for barricades.

Construction area sign and marker panels conforming to the provisions in Section 12-3.06, "Construction Area Signs," of the Standard Specifications shall be installed on barricades in a manner determined by the Engineer at the locations shown on the plans.

Sign panels for construction area signs and marker panels installed on barricades shall conform to the provisions in Section 12-3.06A, "Stationary Mounted Signs," of the Standard Specifications.

Full compensation for furnishing, installing, maintaining, and removing construction area signs and marker panels on barricades shall be considered as included in the contract unit price paid for the type of barricade involved and no separate payment will be made therefor.

Barricades shown on the standard plans as part of a traffic control system will be paid for as provided in "Traffic Control System for Lane Closure" of these special provisions and will not be included in the count for payment of barricades.

#### **10-1.25 END OF QUEUE WARNING**

This work includes warning approaching traffic, using changeable message sign trucks (CMSTs). CMSTs shall be operational during the time specified in the lane requirement charts.

Each CMST must Comply with Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications.

#### **MATERIALS**

Each CMST must:

1. Be in good working order.

2. Have axle rating of at least 2,000 pounds.
3. Have amber rotating beacon.
4. Have front bumper push bar with rubber face.
5. Have external speaker and address system.
6. Have 54" x 42" SC15 (CA) (CAUTION) sign attached to tailgate.

Changeable message sign (CMS) must display alternating messages, "SLOW TRAFFIC AHEAD" and "PREPARE TO STOP," at 3-second intervals with minimum 12-inch tall characters.

### **CONSTRUCTION**

Mount CMS on supporting structure affixed to the truck under the manufacturer's recommendations.

Provide 2 CMSTs at the job site at the time specified in the lane requirement charts and assign at least one trained operator for each CMST when performing work.

Systematically drive CMST through the project limits when performing work, looking for traffic that is moving less than 35 mph. Position a CMST:

1. In advance of Flashing Arrow Sign for each lane closed during a lane closure activity or In advance of work area when lanes are not closed.
2. Between 750 feet to 1500 feet in advance of traffic moving less than 35 mph.
3. To be visible at least 1500 feet to approaching traffic.

Reposition CMST as necessary to maintain above distances until traffic condition abates and traffic flow is greater than 35 mph. Coordinate activity with other CMSTs. Advise other CMSTs and the Engineer of changing traffic conditions.

Safely stop CMST outside of traveled way, as far from traffic as practicable, and where an errant vehicle is least likely to hit.

When traffic conditions persist and work has ceased or you are repositioned outside the project limits, notify the Engineer and continue to maintain traffic.

### **MEASUREMENT AND PAYMENT**

Full compensation for end of queue warning shall be considered as included in the contract lump sum price paid for traffic control system and no separate payment will be made therefor.

#### **10-1.26 PORTABLE CHANGEABLE MESSAGE SIGN**

Portable changeable message signs shall be furnished, placed, operated, and maintained during each lane, shoulder, and ramp closure, and detour to preceding ramp or next ramp at locations approved by the Engineer, as shown on the plans or where designated by the Engineer and shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions. Messages displayed on the portable changeable message signs shall be as specified on the plans and shall conform to Section 12-3.12 "Portable Changeable Message Signs," of the Standard Specifications and "Maintaining Traffic" of these special provisions."

A portable changeable message sign shall be placed in advance of the first warning sign for each stationary lane closure.

A portable changeable message sign shall be placed before and during ramp and shoulder closures.

The number of portable changeable message signs required at any one time will be determined by the number of lane, shoulder and ramp closures, and detour to preceding ramp or next ramp that the Contractor determines are necessary for his operations.

Portable changeable message signs shall be measured per unit per day the sign is in use or sign working day (SWD). Portable changeable message signs at the project site but not in use will not be paid for.

The contract price paid per sign working day (SWD) for portable changeable message sign shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing, placing, operating, maintaining, repairing, replacing, transporting from location to location and removing the portable changeable message signs, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.27 TEMPORARY RAILING**

Temporary railing (Type K) shall be placed as shown on the plans, as specified in the Standard Specifications or these special provisions or where ordered by the Engineer and shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Temporary railing (Type K) shall be secured in place before starting work for which the temporary railing is required.

Reflectors on temporary railing (Type K) shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Temporary railing (Type K) placed in conformance with the provisions in "Public Safety" of these special provisions will be neither measured nor paid for.

### **10-1.28 CHANNELIZER**

Channelizers shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Channelizers shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

When no longer required for the work as determined by the Engineer, channelizers and underlying adhesive used to cement the channelizer bases to the pavement shall be removed. Removed channelizers and adhesive shall become the property of the Contractor and shall be removed from the site of work.

### **10-1.29 TEMPORARY TRAFFIC SCREEN**

Temporary traffic screen shall be furnished, installed, and maintained on top of temporary railing (Type K) at the locations designated on the plans, specified in the special provisions or directed by the Engineer and shall conform to the provisions specified for traffic handling equipment and devices in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Temporary traffic screen panels shall be new or used CDX Grade, or better, plywood or weather resistant strandboard mounted and anchored on temporary railing (Type K). Wale boards shall be new or used Douglas fir, rough sawn, Construction Grade, or better. Pipe screen supports shall be new or used galvanized steel pipe, Schedule 40. Nuts, bolts, and washers shall be cadmium plated. Screws shall be black or cadmium plated flat head, cross slotted screws with full thread length.

When no longer required, as determined by the Engineer, temporary traffic screen shall be removed from the site of the work and shall become the property of the Contractor.

Temporary traffic screen will be measured by the meter from actual measurements along the line of the completed temporary traffic screen, at each location designated on the plans, specified or directed by the Engineer. If the Engineer orders a lateral move of temporary railing, with temporary traffic screen attached, and the repositioning is not shown on the plans, moving the temporary traffic screen will be paid for as part of the extra work for moving the temporary railing as specified in Section 12-4.01, "Measurement and Payment," of the Standard Specifications. Temporary traffic screen placed in excess of the length shown, specified or directed by the Engineer will not be paid for.

The contract price paid per meter for temporary traffic screen shall include full compensation for furnishing all labor, materials (including anchoring systems), tools, equipment, and incidentals, and for doing all the work involved in installing, maintaining, and removing the temporary traffic screen, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.30 TEMPORARY CRASH CUSHION MODULE**

This work shall consist of furnishing, installing, and maintaining sand filled temporary crash cushion modules in groupings or arrays at each location shown on the plans, as specified in these special provisions or where designated by the Engineer. The grouping or array of sand filled modules shall form a complete sand filled temporary crash cushion in conformance with the details shown on the plans and these special provisions.

Attention is directed to "Public Safety" and "Temporary Railing" of these special provisions.

Temporary crash cushions shall be secured in place prior to commencing work for which the temporary crash cushions are required.

Whenever the work or the Contractor's operations establishes a fixed obstacle, the exposed fixed obstacle shall be protected with a sand filled temporary crash cushion. The sand filled temporary crash cushion shall be in place prior to opening the lanes adjacent to the fixed obstacle to public traffic.

Sand filled temporary crash cushions shall be maintained in place at each location, including times when work is not actively in progress. Sand filled temporary crash cushions may be removed during a work period for access to the work provided that the exposed fixed obstacle is 4.6 m or more from a lane carrying public traffic and the temporary crash cushion is reset to protect the obstacle prior to the end of the work period in which the fixed obstacle was exposed. When no longer required, as determined by the Engineer, sand filled temporary crash cushions shall be removed from the site of the work.

At the Contractor's option, the modules for use in sand filled temporary crash cushions shall be either Energite III Inertial Modules, Fitch Inertial Modules or Traffix Sand Barrels manufactured after March 31, 1997, or equal:

1. Energite III and Fitch Inertial Modules, manufactured by Energy Absorption Systems, Inc., 35 East Wacker Drive, Suite 1100, Chicago, IL 60601:
  - 1.1. Northern California: Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, telephone (800) 884-8274, FAX (916) 387-9734
  - 1.2. Southern California: Traffic Control Service, Inc., 1818 E. Orangethorpe, Fullerton, CA 92831-5324, telephone (800) 222-8274, FAX (714) 526-9501
2. Traffix Sand Barrels, manufactured by Traffix Devices, Inc., 220 Calle Pintoresco, San Clemente, CA 92672, telephone (949) 361-5663, FAX (949) 361-9205
  - 2.1. Northern California: United Rentals, Inc., 1533 Berger Drive, San Jose, CA 95112, telephone (408) 287-4303, FAX (408) 287-1929
  - 2.2. Southern California: Statewide Safety & Sign, Inc., P.O. Box 1440, Pismo Beach, CA 93448, telephone (800) 559-7080, FAX (805) 929-5786

Modules contained in each temporary crash cushion shall be of the same type at each location. The color of the modules shall be the standard yellow color, as furnished by the vendor, with black lids. The modules shall exhibit good workmanship free from structural flaws and objectionable surface defects. The modules need not be new. Good used undamaged modules conforming to color and quality of the types specified herein may be utilized. If used Fitch modules requiring a seal are furnished, the top edge of the seal shall be securely fastened to the wall of the module by a continuous strip of heavy duty tape.

Modules shall be filled with sand in conformance with the manufacturer's directions, and to the sand capacity in kilograms for each module shown on the plans. Sand for filling the modules shall be clean washed concrete sand of commercial quality. At the time of placing in the modules, the sand shall contain not more than 7 percent water as determined by California Test 226.

Modules damaged due to the Contractor's operations shall be repaired immediately by the Contractor at the Contractor's expense. Modules damaged beyond repair, as determined by the Engineer, due to the Contractor's operations shall be removed and replaced by the Contractor at the Contractor's expense.

Temporary crash cushion modules may be placed on movable pallets or frames. Comply with dimensions shown on the plans. The pallets or frames shall provide a full bearing base beneath the modules. The modules and supporting pallets or frames shall not be moved by sliding or skidding along the pavement or bridge deck.

A Type R or P marker panel shall be attached to the front of the crash cushion as shown on the plans, when the closest point of the crash cushion array is within 3.6 m of the traveled way. The marker panel, when required, shall be firmly fastened to the crash cushion with commercial quality hardware or by other methods determined by the Engineer.

At the completion of the project, temporary crash cushion modules, sand filling, pallets or frames, and marker panels shall become the property of the Contractor and shall be removed from the site of the work. Temporary crash cushion modules shall not be installed in the permanent work.

Temporary crash cushion modules will be measured by the unit as determined from the actual count of modules used in the work or ordered by the Engineer at each location. Temporary crash cushion modules placed in conformance with the provisions in "Public Safety" of these special provisions and modules placed in excess of the number specified or shown will not be measured nor paid for.

Repairing modules damaged by public traffic will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Modules damaged beyond repair by public traffic, when ordered by the Engineer, shall be removed and replaced immediately by the Contractor. Modules replaced due to damage by public traffic will be measured and paid for as temporary crash cushion module.



If the Engineer orders a lateral move of the sand filled temporary crash cushions and the repositioning is not shown on the plans, moving the sand filled temporary crash cushion will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications and these temporary crash cushion modules will not be counted for payment in the new position.

The contract unit price paid for temporary crash cushion module shall include full compensation for furnishing all labor, materials (including sand, pallets or frames and marker panels), tools, equipment, and incidentals, and for doing all the work involved in furnishing, installing, maintaining, moving, and resetting during a work period for access to the work, and removing from the site of the work when no longer required (including those damaged by public traffic) sand filled temporary crash cushion modules, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.31 EXISTING HIGHWAY FACILITIES**

The work performed in connection with various existing highway facilities shall conform to the provisions in Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

Attention is directed to Section 7-1.06, "Safety and Health Provisions," of the Standard Specifications. Work practices and worker health and safety shall conform to the California Division of Occupational Safety and Health Construction Safety Orders Title 8, of the California Code of Regulations including Section 5158, "Other Confined Space Operations."

#### **EXISTING PAINT SYSTEMS**

The existing paint systems on Bridge Numbers 25-0005L and 25-0005R consist of red lead primer and green alkyd finish paints. Any work that disturbs the existing paint system will expose workers to health hazards and will (1) produce debris containing heavy metal in amounts that exceed the thresholds established in Titles 8 and 22 of the California Code of Regulations or (2) produce toxic fumes when heated. All debris produced when the existing paint system is disturbed shall be contained.

#### **Debris Containment and Collection Program**

Prior to starting work, the Contractor shall submit a debris containment and collection program to the Engineer in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, for debris produced when the existing paint system is disturbed. The program shall identify materials, equipment, and methods to be used when the existing paint system is disturbed and shall include working drawings of containment systems, loads applied to the bridge by containment structures, and provisions for ventilation and air movement for visibility and worker safety.

If the measures being taken by the Contractor are inadequate to provide for the containment and collection of debris produced when the existing paint system is disturbed, the Engineer will direct the Contractor to revise the operations and the debris containment and collection program. The directions will be in writing and will specify the items of work for which the Contractor's debris containment and collection program is inadequate. No further work shall be performed on the items until the debris containment and collection program is adequate and, if required, a revised program has been approved for the containment and collection of debris produced when the existing paint system is disturbed.

The Engineer will notify the Contractor of the approval or rejection of the submitted or revised debris containment and collection program within 2 weeks of submittal of the Contractor's program or revised program.

The State will not be liable to the Contractor for failure to approve all or any portion of an originally submitted or revised debris containment and collection program, nor for delays to the work due to the Contractor's failure to submit an acceptable program.

Full compensation for the debris containment and collection program shall be considered as included in the contract price paid for the item of work causing the existing paint system to be disturbed, and no additional compensation will be allowed therefor.

#### **Safety and Health Provisions**

Attention is directed to Section 7-1.06, "Safety and Health Provisions," of the Standard Specifications. Work practices and worker health and safety shall conform to the California Code of Regulations, Title 8, Construction Safety Orders, including Section 1532.1, "Lead."

The Contractor shall furnish the Engineer a written Code of Safe Practices and shall implement an Injury and Illness Prevention Program and a Hazard Communication Program in conformance with the requirements of Construction Safety Orders, Sections 1509 and 1510.

Prior to starting work that disturbs the existing paint system, and when revisions to the program are required by Section 1532.1, "Lead," the Contractor shall submit the compliance programs required in subsection (e)(2),

"Compliance Program," of Section 1532.1, "Lead," of the Construction Safety Orders to the Engineer in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The compliance programs shall include the data specified in subsections (e)(2)(B) and (e)(2)(C) of Section 1532.1, "Lead." Approval of the compliance programs by the Engineer will not be required. The compliance programs shall be reviewed and signed by a Certified Industrial Hygienist (CIH) who is certified in comprehensive practice by the American Board of Industrial Hygiene (ABIH). Copies of all air monitoring or jobsite inspection reports made by or under the direction of the CIH in conformance with Section 1532.1, "Lead," shall be furnished to the Engineer within 10 days after the date of monitoring or inspection.

Full compensation for furnishing the Engineer with the submittals and for implementing the programs required by this safety and health section shall be considered as included in the contract price paid for the item of work causing the existing paint system to be disturbed, and no additional compensation will be allowed therefor.

#### **Debris Handling**

Debris produced when the existing paint system is disturbed shall not be temporarily stored on the ground. Debris accumulated inside the containment system shall be removed before the end of each work shift. Debris shall be stored in approved, leakproof containers and shall be handled in such a manner that no spillage will occur.

Disposal of debris produced when the existing paint system is disturbed shall be performed in conformance with all applicable Federal, State, and Local hazardous waste laws. Laws that govern this work include:

- A. Health and Safety Code, Division 20, Chapter 6.5 (California Hazardous Waste Control Act).
- B. Title 22; California Code of Regulations, Division 4.5, (Environmental Health Standards for the Management of Hazardous Waste).
- C. Title 8, California Code of Regulations.

Except as otherwise provided herein, debris produced when the existing paint system is disturbed shall be disposed of by the Contractor at an approved Class 1 disposal facility in conformance with the requirements of the disposal facility operator. The debris shall be hauled by a transporter currently registered with the California Department of Toxic Substances Control using correct manifesting procedures and vehicles displaying current certification of compliance. The Contractor shall make all arrangements with the operator of the disposal facility and perform any testing of the debris required by the operator.

At the option of the Contractor, the debris produced when the existing paint system is disturbed may be disposed of by the Contractor at a facility equipped to recycle the debris, subject to the following requirements:

- A. Copper slag abrasive blended by the supplier with a calcium silicate compound shall be used for blast cleaning.
- B. The debris produced when the existing paint system is disturbed shall be tested by the Contractor to confirm that the solubility of the heavy metals is below regulatory limits and that the debris may be transported to the recycling facility as a non-hazardous waste.
- C. The Contractor shall make all arrangements with the operator of the recycling facility and perform any testing of the debris produced when the existing paint system is disturbed that is required by the operator.

Full compensation for debris handling and disposal shall be considered as included in the contract price paid for the item of work causing the existing paint system to be disturbed, and no additional compensation will be allowed therefor.

#### **Work Area Monitoring**

The Contractor shall perform work area monitoring of the ambient air and soil in and around the work area at the bridge site to verify the effectiveness of the containment system. The work area monitoring shall consist of collecting, analyzing, and reporting air and soil test results and recommending the required corrective action when specified exposure levels are exceeded. The work area monitoring shall be carried out under the direction of a CIH. The samples shall be collected at locations designated by the Engineer.

Air samples shall be collected and analyzed in conformance with National Institute for Occupational Safety and Health (NIOSH) methods. Air samples for lead detection shall be collected and analyzed in conformance with NIOSH Method 7082, with a limit of detection of at least  $0.5 \mu\text{g}/\text{m}^3$ . Air samples for detection of other metals shall be collected and analyzed in conformance with NIOSH Method 7300, with a limit of detection of at least one percent of the appropriate Permissible Exposure Limits (PELs) specified by the California/Occupational Safety and Health Administration (Cal/OSHA). Alternative methods of sample collection and analysis, with equivalent limits of detection, may be used at the option of the Contractor.

The airborne metals exposure, outside either the containment system or work areas, shall not exceed the lower of either: (1) 10 percent of the Action Level specified for lead by Section 1532.1, "Lead," of the Construction Safety Orders, or (2) 10 percent of the appropriate PELs specified for other metals by Cal/OSHA.

The air samples shall be collected at least once per week during progress of work that disturbs the existing paint system. All air samples shall be analyzed within 48 hours at a facility accredited by the Environmental Lead Laboratory Accreditation Program of the American Industrial Hygiene Association (AIHA). When corrective action is recommended by the CIH, additional samples may be required by the Engineer to be taken, at the Contractor's expense.

Twelve soil samples shall be collected prior to the start of work, and 4 soil samples shall be collected within 36 hours following completion of cleaning operations of existing steel. Where the cleaning operations extend over large areas of soil or many separate areas of soil at each bridge site, the samples shall be collected at various times during the contract when determined by the Engineer. A soil sample shall consist of 5 plugs, each 19 mm in diameter and 13 mm deep, taken at each corner and center of a one square meter area. Soil samples shall be analyzed for total lead in conformance with Method 3050 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846 published by the United States Environmental Protection Agency.

There shall be no increase in the concentrations of heavy metal in the soil in the area affected when the existing paint system is disturbed. When soil sampling, after completion of work that disturbs the existing paint system, shows an increase in the concentrations of heavy metal, the area affected shall be cleaned and resampled at the Contractor's expense until soil sampling and testing shows concentrations of heavy metal less than or equal to the concentrations collected prior to the start of work.

In areas where there is no exposed soil, there shall be no visible increase in the concentrations of heavy metal on the area affected when the existing paint system is disturbed. Any visible increase in the concentrations of heavy metal, after completion of work that disturbs the existing paint system, shall be removed at the Contractor's expense.

Air and soil sample laboratory analysis results, including results of additional samples taken after corrective action as recommended by the CIH, shall be submitted to the Engineer. The results shall be submitted both verbally within 48 hours after sampling and in writing with a copy to the Contractor, within 5 days after sampling. Sample analysis reports shall be prepared by the CIH as follows:

- A. For both air and soil sample laboratory analysis results, the date and location of sample collection, sample number, contract number, bridge number, full name of the structure as shown on the contract plans, and District-County-Route-Kilometer Post will be required.
- B. For air sample laboratory analysis results, the following will be required:
  1. List of emission control measures in place when air samples were taken.
  2. Air sample results shall be compared to the appropriate PELs.
  3. Chain of custody forms.
  4. Corrective action recommended by the CIH to ensure airborne metals exposure, outside either the containment system or work areas, is within specified limits.
- C. For soil sample laboratory analysis results, the concentrations of heavy metal expressed as parts per million will be required.

Work area monitoring will be paid for on the basis of a lump sum price.

The contract lump sum price paid for work area monitoring shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in collecting and analyzing samples of ambient air and soil for heavy metals, complete in place, including reporting the test results, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **Containment System**

At the option of the Contractor, the containment system shall consist of either (1) a ventilated containment structure, (2) vacuum shrouded surface preparation equipment and drapes, tarps, or other materials, or (3) an equivalent containment system. The containment system shall contain all water, resulting debris, and visible dust produced when the existing paint system is disturbed.

The ventilated containment structure shall conform to the provisions for falsework in Section 51-1.06, "Falsework," of the Standard Specifications.

The minimum total design load of the ventilated containment structure shall consist of the sum of the dead and live vertical loads. Dead load shall consist of the actual load of the ventilated containment structure. Live loads

shall consist of a uniform load of not less than 2160 Pa, which includes 960 Pa of sand load, applied over the area supported, and in addition, a moving 4.5 kN concentrated load shall be applied to produce maximum stress in the main supporting elements. Assumed horizontal loads need not be included in the design of the ventilated containment structure.

The ventilated containment structure shall be supported with either rigid or flexible supports. The rigid or flexible containment materials on the containment structure shall retain airborne particles but may allow airflow through the containment materials. Flexible materials shall be supported and fastened to prevent escape of abrasive and blast materials due to whipping from traffic or wind and to maintain clearances.

All mating joints between the ventilated containment structure and the bridge shall be sealed. Sealing may be by overlapping of seams when using flexible materials or by using tape, caulking, or other sealing measures.

Multiple flap overlapping door tarps shall be used at entry ways to the ventilated containment structure to prevent dust or debris from escaping.

Baffles, louvers, flapper seals, or ducts shall be used at make-up air entry points to the ventilated containment structure to prevent escape of abrasives and resulting surface preparation debris.

The ventilated containment structure shall be properly maintained while work is in progress and shall not be changed from the approved working drawings without prior approval of the Engineer.

The ventilation system in the ventilated containment structure shall be of the forced input airflow type with fans or blowers.

Negative air pressure shall be employed within the ventilated containment structure and will be verified by visual methods by observing the concave nature of the containment materials while taking into account wind effects or by using smoke or other visible means to observe airflow. The input airflow shall be properly balanced with the exhaust capacity throughout the range of operations.

The exhaust airflow of the ventilation system in the ventilated containment structure shall be forced into dust collectors (wet or dry) or bag houses.

Full compensation for the containment system shall be considered as included in the contract price paid for the item of work causing the existing paint system to be disturbed, and no additional compensation will be allowed therefor.

#### **Protective Work Clothing and Hygiene Facilities**

Wherever there is exposure or possible exposure to heavy metals or silica dust at the bridge site, the Contractor shall, for State personnel: (1) furnish, clean, and replace protective work clothing and (2) provide access to hygiene facilities. The furnishing, cleaning, and replacement of protective work clothing and providing access to hygiene facilities shall conform to the provisions of subsections (g), "Protective work clothing and equipment," and (i), "Hygiene facilities and practices," of Section 1532.1, "Lead," of the Construction Safety Orders, and will be required for no more than 3 people.

The protective work clothing and access to hygiene facilities shall be provided during exposure or possible exposure to heavy metals or silica dust at the bridge site and during the application of the undercoats of paint.

Protective work clothing and hygiene facilities shall be inspected and approved by the Engineer before being used by State personnel.

The protective work clothing shall remain the property of the Contractor at the completion of the contract.

Full compensation for protective work clothing and access to hygiene facilities for State personnel shall be considered as included in the contract price paid for the item of work causing the existing paint system to be disturbed, and no additional compensation will be allowed therefor.

#### **ABANDON CULVERT**

Existing culverts, where shown on the plans to be abandoned, shall be abandoned in place or, at the option of the Contractor, the culverts shall be removed and disposed of. Resulting openings into existing structures that are to remain in place shall be plugged with concrete conforming to the provisions in Section 90-10 "Minor Concrete," of the Standard Specifications. The concrete shall contain not less than 300 kg of cementitious material per cubic meter.

Abandoning culverts in place shall conform to the following:

1. Culverts that intersect the side slopes shall be removed to a depth of not less than one meter measured normal to the plane of the finished side slope, before being abandoned.
2. Culverts 300 mm in diameter and larger, shall, at the Contractor's option, be backfilled with either sand, controlled low strength material or slurry cement backfill conforming to the provisions in Section 19-3.062, "Slurry Cement Backfill," of the Standard Specifications by any method acceptable to the Engineer that completely fills the pipe. Sand backfill material shall be clean, free draining, and free from roots and other deleterious substances.

3. The ends of culverts shall be securely closed by a 150 mm thick tight fitting plug or wall of commercial quality concrete.

Culverts shall not be abandoned until their use is no longer required. The Contractor shall notify the Engineer in advance of any intended culvert abandonment.

If the Contractor elects to remove and dispose of a culvert which is specified to be abandoned, as provided herein, backfill specified for the pipe will be measured and paid for in the same manner as if the culvert has been abandoned in place.

Backfill will be measured by the cubic meter determined from the dimensions of the culverts to be abandoned.

The contract price paid per cubic meter for sand backfill shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in backfilling culverts with sand, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Controlled low strength material and slurry cement backfill, if used at the Contractor's option, will be measured and paid for by the cubic meter as sand backfill.

Full compensation for concrete plugs, pipe removal, structure excavation, and backfill shall be considered as included in the contract price paid per meter for abandon culvert and no additional compensation will be allowed therefor.

#### **REMOVE FENCE**

Existing fence, at those locations shown on the plans to be removed, shall be removed and disposed of.

#### **REMOVE METAL BEAM GUARD RAILING**

Existing metal beam guard railing, where shown on the plans to be removed, shall be removed and disposed of.

Existing concrete anchors or steel foundation tubes shall be completely removed and disposed of. Full compensation for removing concrete anchors shall be considered as included in the contract price paid per meter for remove metal beam guard railing and no separate payment will be made therefor.

Full compensation for removing cable anchor assemblies, terminal anchor assemblies or steel foundation tubes shall be considered as included in the contract price paid per meter for remove metal beam guard railing and no separate payment will be made therefor.

#### **REMOVE FLARED END SECTION**

Existing flared end sections, at those locations shown on the plans to be removed, shall be removed and disposed of.

Flared end sections shall not be removed until their use is no longer required.

#### **REMOVE PAVEMENT MARKER**

Existing pavement markers, including underlying adhesive, when no longer required for traffic lane delineation as determined by the Engineer, shall be removed and disposed of.

Full compensation for removing and disposing of pavement markers and underlying adhesive shall be considered as included in the contract price paid per tonne for hot mix asphalt and no separate payment will be made therefor.

#### **REMOVE TRAFFIC STRIPE AND PAVEMENT MARKING**

Traffic stripe and pavement marking shall be removed at the locations shown on the plans and as directed by the Engineer.

Attention is directed to "Water Pollution Control" of these special provisions.

#### **REMOVE DRAINAGE FACILITY**

Existing inlets, where any portion of these structures is within one meter of the grading plane in excavation areas, or within 0.3-m of original ground in embankment areas, or where shown on the plans to be removed, shall be completely removed and disposed of.

#### **REMOVE UTILITY VAULT**

Existing abandon utility vaults, where shown on the plans to be removed, shall be completely removed and disposed of.

The resulting void shall be backfilled with material designated for this area, as shown on the plans.

Full compensation for the designated backfill material shall be considered as included in the contract unit price for remove utility vault and no additional compensation will be allowed therefor.

#### **REMOVE ROADSIDE SIGN**

Existing roadside signs, at those locations shown on the plans to be removed, shall be removed and disposed of.

Existing roadside signs shall not be removed until replacement signs have been installed or until the existing signs are no longer required for the direction of public traffic, unless otherwise directed by the Engineer.

**REMOVE PIPE**

Existing pipes, at those locations shown on the plans to be removed, shall be removed and disposed of.

Pipes shall not be removed until their use is no longer required.

The Contractor shall notify the Engineer 5 days prior to removal.

**REMOVE DOWNDRAIN**

Existing downdrains, at those locations shown on the plans to be removed, shall be removed and disposed of.

Downdrains shall not be removed until their use is no longer required.

The Contractor shall notify the Engineer 5 days prior to removal.

**REMOVE ASPHALT CONCRETE OVERSIDE DRAIN**

Existing asphalt concrete overside drains, at those locations shown on the plans to be removed, shall be removed and disposed of.

Asphalt concrete overside drains shall not be removed until their use is no longer required.

The Contractor shall notify the Engineer 5 days prior to removal.

**RELOCATE ROADSIDE SIGN**

Existing roadside signs shall be removed and relocated to the new locations shown on the plans.

Each roadside sign shall be installed at the new location on the same day that the sign is removed from its original location.

Two holes shall be drilled in each existing post as required to provide the breakaway feature shown on the plans.

**PLASTIC PIPELINER**

Plastic pipeliner shall be furnished and installed in existing culverts at the locations shown on the plans and in conformance with the details shown on the plans and these special provisions.

Plastic pipeliner shall have a nominal diameter, thickness, and maximum Standard Dimension Ratio (when applicable) as shown on the plans or specified.

At the Contractor's option, plastic pipeliners shall be either:

1. Standard Dimension Ratio (SDR) 35 polyvinyl chloride (PVC) pipe conforming to the requirements in AASHTO Designation: M 278; or
2. Polyvinyl chloride (PVC) closed profile wall pipe conforming to the requirements in ASTM Designation: F 1803; or
3. High density polyethylene (HDPE) solid wall pipe conforming to the requirements in ASTM Designation: F 714.

When PVC plastic pipeliners are used, the first and last meter on the ends of the plastic pipeliners shall be high density polyethylene (HDPE) pipe of an allowable type as previously specified in this special provision. The PVC plastic pipeliners shall be connected to HDPE pipeliners with HDPE heat-shrink sleeves. Heat-shrink sleeves shall be installed in conformance with the pipe manufacturer's recommendation and shall shrink a minimum of 25 percent.

A Certificate of Compliance shall be furnished to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for each type of plastic pipeliner furnished.

Plastic pipeliner joints shall be joint systems or couplers conforming to the manufacturer's requirements. Joint systems or couplers shall perform the intended function and comply with the "Standard" shear strength and watertightness provisions specified in Section 61-1.02, "Performance Requirements for Culvert and Drainage Pipe Joints," of the Standard Specifications. The Contractor shall furnish a Certificate of Compliance to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications that the material being furnished conforms to the joint property requirements as described herein.

The existing culvert shall be cleaned thoroughly prior to inserting the plastic pipeliner. Earthy material, trash, cuttings, and other waste materials removed from the existing culverts shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. During the installation of the plastic pipeliner, the Contractor shall provide all necessary protection to prevent damage to the plastic pipeliner and the existing culvert.

Cement mortar conforming to the provisions in Section 65-1.06, "Joints," of the Standard Specifications, shall be placed to form a seal between the existing culvert and the plastic pipeliner, as shown on the plans. Pipe for the weep tube shall be commercial quality, rigid, plastic pipe.

Paper or cloth wadding shall be placed not less than 150 mm from each end of the existing pipe, as shown on the plans, to retain the mortar during sealing operations.

The length of plastic pipeliner to be paid for will be the slope length determined by the Engineer. Pipe placed in excess of the length designated will not be paid for.

The contract price paid per meter for the different sizes of plastic pipeliner shall include full compensation for furnishing all labor, materials (including mortar and weep tube pipe), tools, equipment, and incidentals, and for doing all the work involved in installing plastic pipeliner, complete in place, including mortaring the ends of the plastic pipeliner, cleaning existing culverts, and disposing of residue from cleaning, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **ADJUST INLET**

Existing concrete drainage inlets shall be adjusted as shown on the plans.

Concrete shall be minor concrete conforming to the provisions in Section 90-10, "Minor Concrete," of the Standard Specifications. The concrete shall contain not less than 350 kg of cementitious material per cubic meter.

Adjustment of inlets shall be performed before paving and shall be limited to the area to be paved or surfaced during the working day in which the adjustment is performed. The top of the inlet grate or cover shall be protected from the hot mix asphalt during paving operations by means of heavy plywood covers, steel plate covers or by other methods approved by the Engineer. Excess paving material shall be removed before rolling.

#### **REMOVE BASE AND SURFACING**

Existing base and bituminous surfacing shown on the plans to be removed, shall be removed to the bottom of the existing structural section. Resulting holes and depressions shall be backfilled with earthy material selected from excavation to the lines and grade established by the Engineer.

The material removed shall be disposed of outside the highway right of way in conformance with the provisions in Section 15-2.03, "Disposal," of the Standard Specifications. The material may be used as embankment material provided it meets the requirements as specified in Section 19, "Earthwork", of the Standard Specifications and is placed at a depth of not less than one meter below finished grade or slope lines.

Removing base and surfacing will be measured by the cubic meter in the same manner specified for roadway excavation in conformance with the provisions in Section 19, "Earthwork," of the Standard Specifications and will be paid for at the contract price per cubic meter for remove base and surfacing.

#### **COLD PLANE ASPHALT CONCRETE PAVEMENT**

Existing asphalt concrete pavement shall be cold planed at the locations and to the dimensions shown on the plans.

Planing asphalt concrete pavement shall be performed by the cold planing method. Planing of the asphalt concrete pavement shall not be done by the heater planing method.

Cold planing machines shall be equipped with a cutter head not less than 750 mm in width and shall be operated so that no fumes or smoke will be produced. The cold planing machine shall plane the pavement without requiring the use of a heating device to soften the pavement during or prior to the planing operation.

The depth, width, and shape of the cut shall be as shown on the plans or as designated by the Engineer. The final cut shall result in a uniform surface conforming to the plans. The outside lines of the planed area shall be neat and uniform. Planing asphalt concrete pavement operations shall be performed without damage to the surfacing to remain in place.

Planed widths of pavement shall be continuous except for intersections at cross streets where the planing shall be carried around the corners and through the conform lines. Following planing operations, a drop-off of more than 45 mm will not be allowed between adjacent lanes open to public traffic.

Where transverse joints are planed in the pavement at conform lines no drop-off shall remain between the existing pavement and the planed area when the pavement is opened to public traffic. If Hot Mix Asphalt (HMA) has not been placed to the level of existing pavement before the pavement is to be opened to public traffic a temporary HMA taper shall be constructed. HMA for temporary tapers shall be placed to the level of the existing pavement and tapered on a slope of 1:30 (Vertical: Horizontal) or flatter to the level of the planed area.

HMA for temporary tapers shall be the same quality as the HMA used elsewhere on the project or shall conform to the material requirements for minor HMA. HMA for tapers shall be compacted by any method that will produce a smooth riding surface. Temporary HMA tapers shall be completely removed, including the removal of loose material from the underlying surface, before placing the permanent surfacing. The removed material shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Operations shall be scheduled so that not more than 7 days shall elapse between the time when transverse joints are planed in the pavement at the conform lines and the permanent surfacing is placed at the conform lines unless directed otherwise by the traffic handling plans.

The material planed from the roadway surface, including material deposited in existing gutters or on the adjacent traveled way, shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications. Removal operations of cold planed material shall be concurrent with planing operations and follow within 15 m of the planer, unless otherwise directed by the Engineer.

Cold plane asphalt concrete pavement will be measured by the square meter. The quantity to be paid for will be the actual area of surface cold planed irrespective of the number of passes required to obtain the depth shown on the plans.

The contract price paid per square meter for cold plane asphalt concrete pavement shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in cold planing asphalt concrete surfacing and disposing of planed material, including furnishing the HMA for and constructing, maintaining, removing, and disposing of temporary HMA tapers, as specified in the Standard Specifications and these special provisions and as directed by the Engineer.

#### **BRIDGE REMOVAL**

Removing bridges or portions of bridges shall conform to the provisions in Section 15-4, "Bridge Removal," of the Standard Specifications and these special provisions.

Bridge Removal (Portion) includes, but is not limited to: abutment curtain walls, wingwalls, barrier rails, deck joints, deck overhangs, and barrier railing.

Barrier railing shall be salvaged and delivered to the West Sacramento Maintenance Yard at 1040 South River Road, Sacramento, CA 95961. Arrangements shall be made with Mike Gunn at the Maintenance Yard two weeks prior to delivery of the salvaged bridge railing.

Removed materials that are not to be salvaged or used in the reconstruction shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

The Contractor shall submit a complete bridge removal plan to the Engineer for each bridge listed above, detailing procedures, sequences, and all features required to perform the removal in a safe and controlled manner.

The bridge removal plan shall include, but not be limited to the following:

- A. The removal sequence, including staging of removal operations.
- B. Equipment locations on the structure during removal operations.
- C. Temporary support shoring or temporary bracing.
- D. Locations where work is to be performed over traffic, utilities, or railroad property.
- E. Details, locations, and types of protective covers to be used.
- F. Measures to assure that people, property, utilities, and improvements will not be endangered.
- G. Details and measures for preventing material, equipment, and debris from falling onto public traffic, or railroad property.

When protective covers are required for removal of portions of a bridge, or when superstructure removal work on bridges is involved, the Contractor shall submit working drawings, with design calculations, to the Engineer for the proposed bridge removal plan, and the bridge removal plan shall be prepared and signed by an engineer who is registered as a Civil Engineer in the State of California. The design calculations shall be adequate to demonstrate the stability of the structure during all stages of the removal operations. Calculations shall be provided for each stage of bridge removal and shall include dead and live load values assumed in the design of protective covers.

Temporary support shoring, temporary bracing, and protective covers, as required, shall be designed and constructed in conformance with the provisions in Section 51-1.06, "Falsework," of the Standard Specifications and these special provisions.

The assumed horizontal load to be resisted by the temporary support shoring and temporary bracing, for removal operations only, shall be the sum of the actual horizontal loads due to equipment, construction sequence or other causes, and an allowance for wind, but in no case shall the assumed horizontal load to be resisted in any direction be less than 5 percent of the total dead load of the structure to be removed.



The bridge removal plan shall conform to the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The number of sets of drawings, design calculations, the time for reviewing bridge removal plans shall be the same as specified for falsework working drawings in Section 51-1.06A, "Falsework Design and Drawings," of the Standard Specifications.

For bridge removal that requires the Contractor's registered engineer to prepare and sign the bridge removal plan, the Contractor's registered engineer shall be present at all times when bridge removal operations are in progress. The Contractor's registered engineer shall inspect the bridge removal operation and report in writing on a daily basis the progress of the operation and the status of the remaining structure. A copy of the daily report shall be available at the site of the work at all times. Should an unplanned event occur or the bridge operation deviate from the approved bridge removal plan, the Contractor's registered engineer shall submit immediately to the Engineer for approval, the procedure of operation proposed to correct or remedy the occurrence.

### **REMOVE ASPHALT CONCRETE SURFACING**

Existing asphalt concrete surfacing shall be removed to the top of existing portland cement concrete slab at bridge decks and bridge approaches as shown on the plans and as described in these special provisions.

The Contractor shall verify the depth of asphalt concrete surfacing at a minimum of one location on each shoulder and one location in the traveled way every 30 meters.

The method of removal shall be selected by the Contractor. Equipment or procedures that damage the remaining concrete surface, as determined by the Engineer, shall not be used.

Cold milling equipment may be used to remove asphalt concrete surfacing, except that at least 13 mm of asphalt concrete surfacing shall remain on the deck after the cold milling operation. Removal of the remaining 13 mm of asphalt concrete surfacing shall be performed by other means as selected by the Contractor.

If the Contractor elects to use cold milling equipment, the cold milling equipment shall have the capability to 1) remove concrete a minimum depth of 6 mm, 2) provide a surface relief of no more than 6 mm, and 3) maintain a 4-mm grade tolerance; and shall have the following features:

- A. 3 or 4 riding tracks.
- B. An automatic grade control system with an electronic averaging system having 3 sensors on each side of the equipment.
- C. A conveyer system that leaves no debris on the bridge.
- D. A drum that operates in an up-milling direction.
- E. Bullet tooth tools with tungsten carbide steel cutting tips.
- F. A 16-mm maximum tool spacing.
- G. A maximum operating mass of 25400 kg.

The Contractor shall select which sensors are activated during the milling operation to produce the profile required as shown on the plans.

The cold milling equipment shall have a complete set of new tooth tools at the beginning of the job, and the tooth tools shall be replaced as necessary to perform the work satisfactorily.

The Contractor shall provide personnel on each side of the milling drum to monitor the milling operation and maintain radio communication with the operator at all times during the milling operation.

All removed materials shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Remove asphalt concrete surfacing will be measured by the square meter.

The contract price paid per square meter for remove asphalt concrete surfacing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing asphalt concrete surfacing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **PREPARE CONCRETE BRIDGE DECK SURFACE**

This work shall consist of cleaning the portland cement concrete deck surface by using steel shot-blasting and blowing clean the deck surface, as shown on the plans and as described in these special provisions.

All laitance and surface contaminants including, but not limited to, rust, oil, paint, joint material, curing compound, and other foreign material shall be cleaned from the surface of the existing concrete deck.

If the surface becomes contaminated at any time prior to placing the primer for the overlay, the surface shall be cleaned by abrasive blasting.

Where abrasive blasting is being performed within 3 m of a lane occupied by public traffic, the residue including dust shall be removed immediately after contact between the abrasive and the surface being treated. Removal of the residue shall be performed by a vacuum attachment operating concurrently with the abrasive blasting operation.

Nothing in these special provisions shall relieve the Contractor from the responsibility to conform with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

Equipment shall be fitted with suitable traps, filters, drip pans, or other devices, as necessary, to prevent oil or other deleterious material from being deposited on the deck.

Equipment or procedures that leave fractured aggregate or otherwise damage the concrete surface which is to remain shall not be used.

All removed materials shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Preparing concrete bridge deck surface will be measured by the square meter of surface which is prepared to receive the overlay, based on dimensions shown on the plans.

The contract price paid per square meter for prepare concrete bridge deck surface shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the concrete bridge deck surface, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **REMOVE CONCRETE**

Removing curb, concrete barrier, and concrete curb and sidewalk will be measured by the meter, measured along the curb, barrier or sidewalk before removal operations.

Removing concrete island (portions) will be measured by the square meter, measured before removal operations.

Concrete removed shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

#### **REMOVE UNSOUND CONCRETE**

This work shall consist of the removal and disposal of unsound portland cement concrete, unsound epoxy concrete patches, and all asphalt concrete patches from the decks, curbs, and railings of bridges. Unsound concrete shall be removed as designated by the Engineer.

Unsound concrete is generally that concrete which emits a relatively dead or hollow sound when a chain is dragged over its surface or its surface is tapped with a metal tool. Concrete encasing corroded reinforcing steel beyond the limits identified by the sound may be considered as unsound concrete. The Engineer will determine the soundness of all concrete.

Equipment and tools shall not be used to remove unsound concrete which, in the opinion of the Engineer, cause the removal of excess quantities of sound concrete along with the unsound concrete. Equipment used shall be fitted with suitable traps, filters, drip pans, or other devices to prevent oil or other deleterious matter from being deposited on the deck.

After the removal of unsound concrete has been completed, any existing reinforcing steel which has been exposed shall be restored to position and blocked and tied in conformance with the provisions in Section 52, "Reinforcement," of the Standard Specifications.

Reinforcing steel that has been damaged to the extent that the steel's usefulness is destroyed as a result of the Contractor's operations, shall be repaired or replaced by the Contractor at the Contractor's expense.

Removing unsound concrete will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

#### **10-1.32 CLEARING AND GRUBBING**

Clearing and grubbing shall conform to the provisions in Section 16, "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Within the Riparian Boundary identified on sheet L-5, no native trees greater than 4 inches diameter at breast height may be removed, except for those within the "Access Road" identified on sheet L-5. Using hand tools, trees may be trimmed to the extent necessary to gain access to the work site.

Vegetation shall be cleared and grubbed only within the excavation and embankment slope lines. Areas outside the limits of clearing and grubbing as defined in the Standard Specifications and in these special provisions shall not be cleared and grubbed without prior approval from the Engineer.

Attention is directed to "Order of Work" regarding tree removal.

The Contractor will minimize long term impacts to woody riparian vegetation by trimming trees and shrubs rather than removing the entire woody species, where feasible, within the bridge construction area. Where possible, shrubs and trees should be cut 3 to 5 feet above ground level to leave the root system intact and allow for more rapid regenerations following construction.

### **10-1.33 EARTHWORK**

Earthwork shall conform to the provisions in Section 19, "Earthwork," of the Standard Specifications and these special provisions.

Blasting will not be permitted. Difficult excavation is anticipated due to the presence of rock.

Final excavation slopes shall be left in a rough condition using a tracked vehicle or serration device. The use of cutting edges, such as grader blades, shall not be used for the final cutting of these slopes.

Embankment slopes shall be roughened using a tracked vehicle. Tracking shall be perpendicular to the slope.

Full compensation for roughening of slopes shall be considered as included in the contract price paid per cubic meter for roadway excavation and no additional compensation will be allowed therefor.

The quantity of roadway excavation in the Engineer's Estimate is designated as final pay.

Where a portion of the existing surfacing is to be removed, the outline of the area to be removed shall be cut on a neat line with a power-driven saw to a minimum depth of 50 mm before removing the surfacing. Full compensation for cutting the existing surfacing shall be considered as included in the contract price paid per cubic meter for roadway excavation and no additional compensation will be allowed therefor.

The portion of imported borrow placed within 1.5 m of the finished grade shall have a Resistance (R-Value) of not less than 40.

The quantity of imported borrow in the Engineer's Estimate is designated as final pay.

Reinforcement or metal attached to reinforced concrete rubble placed in embankments shall not protrude above the grading plane. Prior to placement within 0.6-m below the grading plane of embankments, reinforcement or metal shall be trimmed to no greater than 20 mm from the face of reinforced concrete rubble. Full compensation for trimming reinforcement or metal shall be considered as included in the contract prices paid per cubic meter for the types of excavation shown in the Engineer's estimate, or the contract prices paid for furnishing and placing imported borrow or embankment material, as the case may be, and no additional compensation will be allowed therefor.

Imported borrow shall be mineral material including rock, sand, gravel, or earth. The Contractor shall not use man-made refuse in imported borrow including:

- A. Portland cement concrete
- B. Asphalt concrete
- C. Hot mix asphalt
- D. Material planed from roadway surfaces
- E. Residue from grooving or grinding operations
- F. Metal
- G. Rubber
- H. Mixed debris
- I. Rubble

### **STRUCTURE LOW EXPANSION MATERIAL**

Structure Low Expansion Material as shown on the plans shall conform to the following requirements: Structure Low Expansion Material shall have an Expansion Index (EI) less than 50 and a Sand Equivalent greater than 20. The Expansion Index shall be determined in accordance with ASTM D4829. The Sand Equivalent shall be determined in accordance with California Test Method 217. Structure Low Expansion Material shall be placed in accordance with Section 19-6, "Embankment Construction" of the Standard Specifications, and as specified in these special provisions. Structure Low Expansion Material limits does not include the limits of structure backfill (Bridge).

Structure Low Expansion Material shall be uniformly graded, with maximum aggregate size no greater than 25mm. The material shall be free of concrete, asphalt, or other deleterious substances.

The Contract price paid per cubic meter for Structure Low Expansion Material shall include full compensation for furnishing all labor, equipment, materials, tools, incidentals and for doing all work involved in excavating and disposing existing material, and for furnishing and placing Structure Low Expansion Material, complete in place, as

shown on the plans and specified in these special provisions, and no additional compensation will be allowed therefore.

Excavation for pier columns shall be performed in such a manner that the concrete for the pier columns, when placed, shall be against firm, undisturbed material on the bottom and sides of the excavation, at or outside of the neat lines of the pier columns as shown on the plans.

Difficult pier column excavation is anticipated due to the hardness of the rock. The use of mechanical or chemical techniques for presplitting is anticipated. Blasting is not allowed. The method(s) selected by the Contractor shall follow manufacturers recommendations and be performed in accordance with all applicable local, state, and federal laws, and shall be approved by the Engineer.

Excavation techniques that result in damage to the final rock surface as shown on the plans shall be immediately discontinued.

Shoring, lagging, casings, liners or other bracing shall be furnished and placed to adequately support the excavation.

Rock bolts and wire mesh may remain in place.

Steel shoring, steel lagging, and other steel bracing may remain in place, subject to the following requirements:

- A. The amount of bracing remaining in place shall not exceed the practical minimum that is necessary to safely support the sides of the excavation.
- B. Bracing shall be placed in an open type arrangement with ample clearance between adjacent braces to permit the ready flow of concrete around the bracing and provide proper clearance to the reinforcement.
- C. Steel casings, liners, and lagging shall be outside of the neat lines of the pier columns.
- D. Steel lagging remaining in place shall be in an open type arrangement such that the area of the lagging does not exceed 15 percent of the area of the sides of the excavation, permitting ready flow of concrete through and around the openings.
- E. Open areas in lagging shall be uniformly distributed over the sides of the excavation for the full depth of pier column.

Full compensation for removal of sloughing material, ground or surface water, all necessary storage, treatment and/or off-site disposal of material and water necessary to comply with water discharge requirements of these specifications and permits/agreement included in Appendix "B" (Specific attention directed to Regional Water Quality Control Board 401 Water Quality Cert and Fish & Game Agreement Regarding Proposed Stream Alteration requirement) is specifically not included in payment under Water Pollution Control, but is specifically included in the contract price per cubic meter for structure excavation (pier column) and no additional compensation will be allowed therefore.

Steel casings and liners shall be removed before or during the placing of concrete.

Timber shoring and other timber bracing extending across the pier columns, within the neat lines of the columns, shall be removed before or during the placing of concrete.

Structure excavation for pier column concrete will be paid for at the contract price per cubic meter for structure excavation (pier column).

The limits of payment for structure excavation (pier column) shall be as follows. The bottom limit shall be the bottom of the foundation excavation in the completed work. The upper and horizontal limits shall be as shown on the plans.

Full compensation for removing material from outside the limits of payment for structure excavation (pier column) shall be considered as included in the contract price paid per cubic meter for structure excavation (pier column) and no additional compensation will be allowed therefor.

Full compensation for furnishing, placing, and removing or leaving the bracing for the pier column excavation shall be considered as included in the contract lump sum price paid for trench and excavation safety and no additional compensation will be allowed therefor.

At the locations and to the limits shown on the plans, material below the bottom of bridge footings shall be removed and replaced with Class 2 aggregate base material in conformance with the placing and compacting requirements for structure backfill. The relative compaction shall be not less than 95 percent. Removal of the material will be measured and paid for by the cubic meter as structure excavation (bridge) and furnishing, placing, and compacting the replacement material will be measured and paid for by the cubic meter as Class 2 aggregate base.

At the locations and to the limits shown on the plans, material below the bottom of bridge footings shall be removed and replaced with Class 4 concrete material in conformance with Sections 51 "Concrete Structures" and 90 "Portland Cement Concrete. Removal of the material will be measured and paid for by the cubic meter as structure

excavation (bridge) and furnishing, and placing the replacement material will be measured and paid for by the cubic meter as class 4 concrete (backfill).

At the locations and to the limits shown on the plans, material below the bottom of retaining wall footings shall be removed and replaced with Class 2 aggregate base material in conformance with the placing and compacting requirements for structure backfill. The relative compaction shall be not less than 95 percent. Removal of the material will be measured and paid for by the cubic meter as structure excavation (retaining wall) and furnishing, placing, and compacting the replacement material will be measured and paid for by the cubic meter as Class 2 aggregate base.

At the footings where material is removed and replaced, as described herein, a relative compaction of not less than 95 percent shall be obtained for a minimum depth of 150 mm below the bottom of excavation.

Pervious backfill material placed within the limits of payment for bridges will be measured and paid for as structure backfill (bridge).

Pervious backfill material placed within the limits of payment for retaining walls will be measured and paid for as structure backfill (retaining wall).

If structure excavation or structure backfill for bridges is not otherwise designated by type and payment for the structure excavation or structure backfill has not otherwise been provided for in the Standard Specifications or these special provisions, the structure excavation or structure backfill will be measured and paid for as structure excavation (bridge) or structure backfill (bridge), respectively.

Structure excavation or backfill designated as (Type P4R), for the pier column location shown on the plans, will be measured and paid for as structure excavation or backfill (Type P4R). Deep overburden is expected to be encountered at these locations, however, temporary shoring is not shown or specified on the plans.

Full compensation for furnishing, placing, and removing temporary supports and shoring for structure excavation (Type P4R), including developing working drawings and construction sequences, shall be considered as included in the contract lump sum price paid for trench and excavation safety and no additional compensation will be allowed therefor.

Full compensation for removal of abandoned utility ducts in conflict with footing excavations shall be considered as included in the contract price paid per cubic meter for structure excavation (retaining wall) and no additional compensation will be allowed therefor.

#### **10-1.34 CONTROLLED LOW STRENGTH MATERIAL**

Controlled low strength material shall consist of a workable mixture of aggregate, cementitious materials, and water and shall conform to the provisions for slurry cement backfill in Section 19-3.062, "Slurry Cement Backfill," of the Standard Specifications and these special provisions.

At the option of the Contractor, controlled low strength material may be used as structure backfill for pipe culverts, except that controlled low strength material shall not be used as structure backfill for culverts having a diameter or span greater than 6.1 m.

When controlled low strength material is used for structure backfill, the width of the excavation shown on the plans may be reduced so that the clear distance between the outside of the pipe and the side of the excavation, on each side of the pipe, is a minimum of 300 mm. This minimum may be reduced to 150 mm when the height of cover is less than or equal to 6.1 m or the pipe diameter or span is less than 1050 mm.

Controlled low strength material in new construction shall not be permanently placed higher than the basement soil. For trenches in existing pavements, permanent placement shall be no higher than the bottom of the existing pavement permeable drainage layer. If a drainage layer does not exist, permanent placement in existing pavements shall be no higher than 25 mm below the bottom of the existing asphalt concrete surfacing or no higher than the top of base below the existing portland cement concrete pavement. The minimum height that controlled low strength material shall be placed, relative to the culvert invert, is 0.5 diameter or 0.5 height for rigid culverts and 0.7 diameter or 0.7 height for flexible culverts.

When controlled low strength material is proposed for use, the Contractor shall submit a mix design and test data to the Engineer for approval prior to excavating the trench for which controlled low strength material is proposed for use. The test data and mix design shall provide for the following:

- A. A 28-day compressive strength between 345 kPa and 690 kPa for pipe culverts having a height of cover of 6.1 m or less and a minimum 28-day compressive strength of 690 kPa for pipe culverts having a height of

- cover greater than 6.1 m. Compressive strength shall be determined in conformance with the requirements in ASTM Designation: D 4832.
- B. Cement shall be any type of portland cement conforming to the requirements in ASTM Designation: C 150; or any type of blended hydraulic cement conforming to the requirements in ASTM Designation: C 595M or the physical requirements in ASTM Designation: C 1157M. Testing of cement will not be required.
  - C. Admixtures may be used in conformance with the provisions in Section 90-4, "Admixtures," of the Standard Specifications. Chemical admixtures containing chlorides as Cl in excess of one percent by mass of admixture, as determined in conformance with the requirements of California Test 415, shall not be used. If an air-entraining admixture is used, the maximum air content shall be limited to 20 percent. Mineral admixtures shall be used at the Contractor's option.

Materials for controlled low strength material shall be thoroughly machine-mixed in a pugmill, rotary drum or other approved mixer. Mixing shall continue until the cementitious material and water are thoroughly dispersed throughout the material. Controlled low strength material shall be placed in the work within 3 hours after introduction of the cement to the aggregates.

When controlled low strength material is to be placed within the traveled way or otherwise to be covered by paving or embankment materials, the material shall achieve a maximum indentation diameter of 76 mm prior to covering and opening to public traffic. Penetration resistance shall be measured in conformance with the requirements in ASTM Designation: D 6024.

Controlled low strength material used as structure backfill for pipe culverts will be considered structure backfill for compensation purposes.

#### **10-1.35 MOVE-IN/MOVE-OUT (EROSION CONTROL)**

Move-in/move-out (erosion control) shall include moving onto the project when an area is ready to receive erosion control as determined by the Engineer, setting up all required personnel and equipment for the application of erosion control materials and moving out all personnel and equipment when erosion control in that area is completed.

When areas are ready to receive applications of erosion control (Type D), as determined by the Engineer, the Contractor shall begin erosion control work in that area within 5 working days of the Engineer's notification to perform the erosion control work.

Attention is directed to the requirements of erosion control (Type D) elsewhere in these special provisions.

Quantities of move-in/move-out (erosion control) will be determined as units from actual count as determined by the Engineer. For measurement purposes, a move-in followed by a move-out will be considered as one unit.

The contract unit price paid for move-in/move-out (erosion control) shall include full compensation for furnishing all labor, materials (excluding erosion control materials), tools, equipment, and incidentals and for doing all the work involved in moving in and removing from the project all personnel and equipment necessary for application of erosion control (Type D), as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

No adjustment of compensation will be made for any increase or decrease in the quantities of move-in/move-out (erosion control) required, regardless of the reason for the increase or decrease. The provisions in Section 4-1.03B, "Increased or Decreased Quantities," of the Standard Specifications shall not apply to the item of move-in/move-out (erosion control).

#### **10-1.36 EROSION CONTROL (TYPE D)**

Erosion control (Type D) includes applying erosion control materials to embankment and excavation slopes and other areas disturbed by construction activities. Erosion control (Type D) must comply with Section 20-3, "Erosion Control," of the Standard Specifications and these special provisions.

Apply erosion control (Type D) when an area is ready to receive erosion control as determined by the Engineer and under "Move-in/Move-out (Erosion Control)" of these special provisions.

Before applying erosion control materials, prepare soil surface under Section 19-2.05, "Slopes," of the Standard Specifications, except that rills and gullies exceeding 50 mm in depth or width must be leveled. Remove vegetative growth, temporary erosion control materials, and other debris from areas to receive erosion control.

Before applying erosion control materials, the Engineer designates the ground location of erosion control (Type D) in increments of one hectare or smaller for smaller areas. Place stakes or other suitable markers at the locations designated by the Engineer. Furnish all tools, labor and materials required to adequately indicate the various locations.

## MATERIALS

Materials must comply with Section 20-2, "Materials," of the Standard Specifications and these special provisions.

### Seed

Seed must comply with Section 20-2.10, "Seed," of the Standard Specifications and be certified weed-free. Seed not required to be labeled under the California Food and Agricultural Code shall be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts or by a seed technologist certified by the Society of Commercial Seed Technologists. Measure and mix individual seed species in the presence of the Engineer.

Seed must contain at most 1.0 percent total weed seed by weight.

Deliver seed to the job site in unopened separate containers with the seed tag attached. Containers without a seed tag attached are not accepted. Seed shall be certified weed-free. The Engineer takes a sample of approximately 30 g or 60 ml of seed for each seed lot greater than 1 kg.

Seed must comply with the following:

Seed		
Botanical Name (Common Name)	Percent Germination (Minimum)	Kilograms Pure Live Seed Per Hectare (Slope Measurement)
Eschscholzia californica (California Poppy)	67.5	2.5
Trifolium willdenovii (T. tridentatum) Tomcat Clover	63	3
Melica californica (California melic)	54	3
Leymus triticoides (Creeping Wildrye)	72	7.5
Nassella lepida (Foothill needlegrass)	63	6
Lotus purshianus (Purshing lotus)	45	8

Seed source shall originate from Sacramento Valley and Sierra Foothills Regions.

### Seed Sampling Supplies

At the time of seed sampling, provide the Engineer a glassine lined bag and custody seal tag for each seed lot sample.

### Commercial Fertilizer

Commercial fertilizer must comply with Section 20-2.02, "Commercial Fertilizer," of the Standard Specifications and have a guaranteed chemical analysis within 2 percent of 6-7 percent nitrogen, 2-3 percent phosphoric acid and 3-4 percent water soluble potash.

### Straw

Straw must be derived from rice and certified weed free.

Straw must be free of plastic, glass, metal, rocks, and refuse or other deleterious material.

### Compost

The compost producer must be fully permitted as specified under the California Integrated Waste Management Board, Local Enforcement Agencies and any other State and Local Agencies that regulate Solid Waste Facilities. If exempt from State permitting requirements, the composting facility must certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.

The compost producer must be a participant in United States Composting Council's Seal of Testing Assurance program.

Compost may be derived from any single, or mixture of any of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation; or clean processed recycled wood products
2. Biosolids
3. Manure
4. Mixed food waste

Compost feedstock materials to reduce weed seeds, pathogens and deleterious materials as specified under Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3

Compost must not be derived from mixed municipal solid waste and must be reasonably free of visible contaminants. Compost must not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. Compost must not possess objectionable odors.

Metal concentrations in compost must not exceed the maximum metal concentrations listed in Title 14, California Code of Regulations, Division 7, Chapter 3.1, Section 17868.2.

Compost must comply with the following:

Physical/Chemical Requirements		
Property	Test Method	Requirement
pH	*TMECC 04.11-A, Elastometric pH 1:5 Slurry Method, pH Units	6.0–8.0
Soluble Salts	TMECC 04.10-A, Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0-10.0
Moisture Content	TMECC 03.09-A, Total Solids & Moisture at 70+/- 5 deg C, % Wet Weight Basis	N/A
Organic Matter Content	TMECC 05.07-A, Loss-On-Ignition Organic Matter Method (LOI), % Dry Weight Basis	30–65
Maturity	TMECC 05.05-A, Germination and Vigor Seed Emergence Seedling Vigor % Relative to Positive Control	80 or Above 80 or Above
Stability	TMECC 05.08-B, Carbon Dioxide Evolution Rate mg CO <sub>2</sub> -C/g OM per day	8 or below
Particle Size	TMECC 02.02-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	95% Passing 16 mm 70% Passing 9 mm
Pathogen	TMECC 07.01-B, Fecal Coliform Bacteria < 1000 MPN/gram dry wt.	Pass
Pathogen	TMECC 07.01-B, Salmonella < 3 MPN/4 grams dry wt.	Pass
Physical Contaminants	TMECC 02.02-C, Man Made Inert Removal and Classification: Plastic, Glass and Metal, % > 4mm fraction	Combined Total: < 1.0
Physical Contaminants	TMECC 02.02-C, Man Made Inert Removal and Classification: Sharps (Sewing needles, straight pins and hypodermic needles), % > 4mm fraction	None Detected

\*TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).

Before compost application, provide the Engineer with a copy of the compost producer's compost technical data sheet and a copy of the compost producers Seal of Testing Assurance certification. The compost technical data sheet includes:

1. Laboratory analytical test results
2. Directions for product use
3. List of product ingredients



Before compost application, provide the Engineer with a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

**Stabilizing Emulsion**

Stabilizing emulsion must comply with Section 20-2.11, "Stabilizing Emulsion," of the Standard Specifications and these special provisions.

Stabilizing emulsion:

1. Must be in a dry powder form
2. Must be a processed organic adhesive used as a soil tackifier
3. May be reemulsifiable

**APPLICATION**

Apply erosion control materials in separate applications in the following sequence:

1. Apply the following mixture with hydroseeding equipment at the rates indicated within 60 minutes after the seed has been added to the mixture:

Material	Kilograms Per Hectare (Slope Measurement)
Seed	30
Fiber	750
Commercial Fertilizer	600

Material	Cubic Meter Per Hectare (Slope Measurement)
Compost	4.3

2. Compost may be dry applied at the total of the rates specified in the preceding table and the following table instead of including it as part of the hydro-seeding operations. In areas where the compost is dry applied, all compost for that area must be applied before the next operation.
3. Apply straw at the rate of 2.8 tonnes per hectare based on slope measurements. Incorporation of straw will not be required. Distribute straw evenly without clumping or piling.
4. Apply the following mixture with hydro-seeding equipment at the corresponding rates:

Material	Kilograms Per Hectare (Slope Measurement)
Fiber	750
Commercial Fertilizer	600
Stabilizing Emulsion (Solids)	135

Material	Cubic Meter Per Hectare (Slope Measurement)
Compost	4.3

The ratio of total water to total stabilizing emulsion in the mixture must be as recommended by the manufacturer.

Once straw work is started in an area, complete stabilizing emulsion applications in that area on the same working day.

The Engineer may change the rates of erosion control materials to meet field conditions.

## **MEASUREMENT AND PAYMENT**

Erosion control (Type D) will be measured by the square meter or by the hectare, whichever is designated in the Engineer's Estimate. The area will be calculated on the basis of actual or computed slope measurements.

The contract price paid per square meter or hectare for erosion control (Type D) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying erosion control (Type D) complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.37 AGGREGATE BASE**

Aggregate base must comply with Section 26, "Aggregate Bases," of the Standard Specifications and these special provisions.

Aggregate base must be Class 2.

Do not store reclaimed asphalt concrete or aggregate base with reclaimed asphalt concrete within 30 m measured horizontally of any culvert, watercourse, or bridge.

### **10-1.38 SLURRY SEAL**

Slurry seal shall conform to the provisions in Section 37-2, "Slurry Seal," of the Standard Specifications and these special provisions.

The aggregate for slurry seal shall be Type I.

Polymer modified asphaltic emulsion shall be composed of a bituminous material uniformly emulsified with water and an emulsifying or stabilization agent and shall contain a polymer.

The polymer used in the manufacture of polymer modified asphaltic emulsions shall be at the option of the Contractor, either neoprene, or a copolymer of butadiene and styrene. The polymer used in the polymer modified asphaltic emulsion shall be homogenous and shall be milled into the product at the colloid mill.

The polymer modified asphalt emulsion shall be grade PMCQS1h and shall conform to the following requirements:

Type	Cationic	
Grade	PMCQS 1h	
Properties	Min.	Max
Tests on Emulsion:		
Viscosity SSF @ 25°C, sec AASHTO Designation T-59	15	90
Sieve Test, % AASHTO Designation T-539	—	0.30
Storage Stability, 1 day, % AASHTO Designation T-59	—	1
Residue by Evaporation, % California Test 331	57	—
Particle Charge AASHTO Designation T-59	Positive	
Tests on Residue from Evaporation Test		
Penetration, 25°C AASHTO Designation: T 49	40	90
Ductility, 25°C, mm AASHTO Designation: T 51	400	—
Torsional Recovery, % California Test 332	18	—
or		
Polymer Content, % California Test 401	2.5	—

Note:

When the test for polymer content of polymer modified asphaltic emulsion is used, see sampling requirements in Section 94-1.03, "Sampling" of the Standard Specifications.

### 10-1.39 HOT MIX ASPHALT

#### GENERAL

##### Summary

This work includes producing and placing hot mix asphalt (HMA) Type A using the Method process. Comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

#### MATERIALS

##### Asphalt Binder

The grade of asphalt binder mixed with aggregate for HMA Type A must be PG 64-16.

##### Aggregate

The aggregate for HMA Type A must comply with the 19-mm grading.

#### CONSTRUCTION

##### Vertical Joints

Do not leave a vertical joint more than 45 mm high between adjacent lanes open to public traffic.

##### Widening

If widening existing pavement, construct new structural section to match the elevation of the existing pavement's edge for the project's entire length before placing RHMA-O over the existing pavement.

### **Conform Tapers**

Place additional HMA along the pavement's edge to conform to road connections and private drives. Hand rake, if necessary, and compact the additional HMA to form a smooth conform taper.

## **10-1.40 RUBBERIZED HOT MIX ASPHALT (OPEN GRADED)**

### **GENERAL**

#### **Summary**

This work includes producing and placing rubberized hot mix asphalt (open graded) (RHMA-O) using the Standard process.

Comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

### **MATERIALS**

Asphalt binder mixed with asphalt modifier and crumb rubber modifier (CRM) for asphalt rubber binder must be PG 64-16. Use a minimum of 9kg of crumb rubber per tonne of hot mix. Crumb rubber must be from California waste tires or California waste tire-derived products. Submit documentation to Engineer substantiating the source of the tire materials used ten (10) days prior to installing the RHMA-O.

The aggregate for RHMA- O must comply with the 12.5-mm grading.

The Engineer uses the following formula to determine the optimum asphalt binder content for RHMA-O:

$$OBC_2 = (OBC_1) \times 1.20$$

where:

$OBC_1$  = Optimum bitumen content using the specified PG asphalt binder under California Test 368.

$OBC_2$  = Optimum bitumen content using asphalt rubber binder.

### **CONSTRUCTION**

#### **Vertical Joints**

Before opening the lane to public traffic, pave shoulders and median borders adjacent to a lane being paved.

Place RHMA-O on adjacent traveled way lanes so that at the end of each work shift, the distance between the ends of RHMA-O layers on adjacent lanes is between 1.5 m and 3 m. Place additional RHMA- RHMA-O along the transverse edge at each lane's end and along the exposed longitudinal edges between adjacent lanes. Hand rake and compact the additional RHMA-O to form temporary conforms. You may place Kraft paper, or another approved bond breaker, under the conform tapers to facilitate the taper removal when paving operations resume.

#### **Conform Tapers**

Place additional RHMA-O along the pavement's edge to conform to road connections and private drives. Hand-rake and compact the additional RHMA- O to form a smooth conform taper.

## **10-1.41 HOT MIX ASPHALT (MISCELLANEOUS AREAS)**

### **GENERAL**

#### **Summary**

This work includes producing hot mix asphalt (HMA) and placing it on miscellaneous areas.

Comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

### **MEASUREMENT AND PAYMENT**

If there is a contract item for place hot mix asphalt (miscellaneous area) paid for by the square meter, this item is limited to the areas listed on the plans and is in addition to the contract items for the materials involved.

#### **10-1.42 TEMPORARY HOT MIX ASPHALT**

Temporary hot mix asphalt (HMA) shall be placed at locations shown on the plans and shall conform to the provisions for HMA in Section 39, "Hot Mix Asphalt" of the Standard Specifications and "Hot Mix Asphalt" of these special provisions.

Temporary HMA shall be Type A and conform to "Hot Mix Asphalt" of these special provisions.

Temporary HMA shall not be removed until its use is no longer required. The Contractor shall notify the Engineer in advance of any temporary HMA removal.

Full compensation for placing, maintaining, and removing temporary hot mix asphalt when no longer needed shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

#### **10-1.43 MINOR HOT MIX ASPHALT**

##### **GENERAL**

##### **Summary**

This work includes producing hot mix asphalt (HMA) at a central mixing plant and placing it as temporary tapers as specified in "Cold Plane Asphalt Concrete" of these special provisions.

##### **MATERIALS**

For minor HMA:

1. Do not submit a job mix formula.
2. Choose the 9.5-mm or 12.5-mm HMA Type A or Type B aggregate gradation under Section 39-1.02E, "Aggregate," of the Standard Specifications.
3. Minimum asphalt binder content must be 6.8 percent for 9.5-mm aggregate gradation and 6.0 percent for 12.5-mm aggregate gradation.
4. Choose asphalt binder Grade PG 64-10, PG 64-16, or PG 70-10 under Section 92, "Asphalts," of the Standard Specifications.

If you request and the Engineer authorizes, you may reduce the minimum asphalt binder content. Tack coat must comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications.

##### **CONSTRUCTION**

Spread and compact minor HMA by methods that produce an HMA surfacing:

1. Textured uniformly
2. Compacted firmly
3. Without depressions, humps, and irregularities

##### **MEASUREMENT AND PAYMENT**

Full compensation for minor hot mix asphalt shall be considered as included in the contract price paid per tonne for Hot Mix Asphalt (Type A) and no separate payment will be made therefor.

#### **10-1.44 (BLANK)**

#### **10-1.45 (BLANK)**

#### **10-1.46 (BLANK)**

#### **10-1.47 PILING**

##### **GENERAL**

Piling shall conform to the provisions in Section 49, "Piling," of the Standard Specifications, and these special provisions.

Unless otherwise specified, welding of any work performed in conformance with the provisions in Section 49, "Piling," of the Standard Specifications, shall be in conformance with the requirements in AWS D1.1.

Attention is directed to "Supplemental Project Information," and "Welding" of these special provisions.

Difficult pile installation is anticipated due to the presence of caving soils, high ground water, cobbles and boulders, and traffic control.

#### **CAST-IN-DRILLED-HOLE CONCRETE PILES**

Cast-in-drilled-hole concrete piling shall conform to the provisions in Section 49-4, "Cast-In-Place Concrete Piles," of the Standard Specifications and these special provisions.

The provisions of "Welding" of these special provisions shall not apply to temporary steel casings.

Cast-in-drilled-hole concrete piles 600 mm in diameter or larger may be constructed by excavation and depositing concrete under slurry.

#### **Materials**

Concrete deposited under slurry shall have a nominal penetration equal to or greater than 90 mm. Concrete shall be proportioned to prevent excessive bleed water and segregation.

Concrete deposited under slurry shall contain not less than 400 kilograms of cementitious material per cubic meter.

Attention is directed to "Corrosion Control for Portland Cement Concrete" of these special provisions.

The combined aggregate grading used in concrete for cast-in-drilled-hole concrete piling shall be either the 25-mm maximum grading, the 12.5-mm maximum grading, or the 9.5-mm maximum grading and shall conform to the requirements in Section 90-3, "Aggregate Gradings," of the Standard Specifications.

Concrete for portions of cast-in-drilled-hole concrete piles to be formed shall contain not less than 400 kilograms of cementitious material per cubic meter and shall contain  $6.0 \pm 1.5$  percent air entrainment in the freshly mixed concrete.

#### **Mineral Slurry**

Mineral slurry shall be mixed and thoroughly hydrated in slurry tanks, and slurry shall be sampled from the slurry tanks and tested before placement in the drilled hole.

Slurry shall be recirculated or continuously agitated in the drilled hole to maintain the specified properties.

Recirculation shall include removal of drill cuttings from the slurry before discharging the slurry back into the drilled hole. When recirculation is used, the slurry shall be sampled and tested at least every 2 hours after beginning its use until tests show that the samples taken from the slurry tank and from near the bottom of the hole have consistent specified properties. Subsequently, slurry shall be sampled at least twice per shift as long as the specified properties remain consistent.

Slurry that is not recirculated in the drilled hole shall be sampled and tested at least every 2 hours after beginning its use. The slurry shall be sampled mid-height and near the bottom of the hole. Slurry shall be recirculated when tests show that the samples taken from mid-height and near the bottom of the hole do not have consistent specified properties.

Slurry shall also be sampled and tested before final cleaning of the bottom of the hole and again just before placing concrete. Samples shall be taken from mid-height and near the bottom of the hole. Cleaning of the bottom of the hole and placement of the concrete shall not start until tests show that the samples taken from mid-height and near the bottom of the hole have consistent specified properties.

Mineral slurry shall be tested for conformance to the requirements shown in the following table:

MINERAL SLURRY		
PROPERTY	REQUIREMENT	TEST
Density (kg/m <sup>3</sup> ) - before placement in the drilled hole - during drilling  - before final cleaning - immediately before placing concrete	1030* to 1110*   1030* to 1200*	Mud Weight (Density) API 13B-1 Section 1
Viscosity (seconds/liter)  bentonite  attapulgate	29 to 53   29 to 42	Marsh Funnel and Cup API 13B-1 Section 2.2
pH	8 to 10.5	Glass Electrode pH Meter or pH Paper
Sand Content (percent) - before final cleaning - immediately before placing concrete	less than or equal to 4.0	Sand API 13B-1 Section 5
<p>*When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 32 kg/m<sup>3</sup>. Slurry temperature shall be at least 4°C when tested.</p>		

Any caked slurry on the sides or bottom of hole shall be removed before placing reinforcement. If concrete is not placed immediately after placing reinforcement, the reinforcement shall be removed and cleaned of slurry, the sides of the drilled hole cleaned of caked slurry, and the reinforcement again placed in the hole for concrete placement.

### Synthetic Slurry

Synthetic slurries shall be used in conformance with the manufacturer's recommendations and these special provisions. The following synthetic slurries may be used:

PRODUCT	MANUFACTURER
SlurryPro CDP	KB Technologies Ltd. 3648 FM 1960 West Suite 107 Houston, TX 77068 (800) 525-5237
Super Mud	PDS Company c/o Champion Equipment Company 8140 East Rosecrans Ave. Paramount, CA 90723 (562) 634-8180
Shore Pac GCV	CETCO Drilling Products Group 1350 West Shure Drive Arlington Heights, IL 60004 (847) 392-5800
Novagel Polymer	Geo-Tech Drilling Fluids 220 N. Zapata Hwy, Suite 11A Laredo, TX 78043 (210) 587-4758

Inclusion of a synthetic slurry on the above list may be obtained by meeting the Department's requirements for synthetic slurries. The requirements can be obtained from the Offices of Structures Design, P.O. Box 168041, MS# 9-4/11G, Sacramento, CA 95816-8041.

Synthetic slurries listed may not be appropriate for a given site.

Synthetic slurries shall not be used in holes drilled in primarily soft or very soft cohesive soils as determined by the Engineer.

A manufacturer's representative, as approved by the Engineer, shall provide technical assistance for the use of their product, shall be at the site before introduction of the synthetic slurry into a drilled hole, and shall remain at the site until released by the Engineer.

Synthetic slurries shall be sampled and tested at both mid-height and near the bottom of the drilled hole. Samples shall be taken and tested during drilling as necessary to verify the control of the properties of the slurry. Samples shall be taken and tested when drilling is complete, but before final cleaning of the bottom of the hole. When samples are in conformance with the requirements shown in the following tables for each slurry product, the bottom of the hole shall be cleaned and any loose or settled material removed. Samples shall be obtained and tested after final cleaning and immediately before placing concrete.



SlurryPro CDP synthetic slurries shall be tested for conformance to the requirements shown in the following table:

SLURRYPRO CDP KB Technologies Ltd.		
PROPERTY	REQUIREMENT	TEST
Density (kg/m <sup>3</sup> ) - during drilling  - before final cleaning - just before placing concrete	less than or equal to 1075*  less than or equal to 1025*	Mud Weight (Density) API 13B-1 Section 1
Viscosity (seconds/liter) - during drilling  -before final cleaning - just before placing concrete	53 to 127  less than or equal to 74	Marsh Funnel and Cup API 13B-1 Section 2.2
pH	6 to 11.5	Glass Electrode pH Meter or pH Paper
Sand Content (percent) - before final cleaning - just before placing concrete	less than or equal to 0.5	Sand API 13B-1 Section 5
*When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 32 kg/m <sup>3</sup> . Slurry temperature shall be at least 4°C when tested.		

Super Mud synthetic slurries shall be tested for conformance to the requirements shown in the following table:

SUPER MUD PDS Company		
PROPERTY	REQUIREMENT	TEST
Density (kg/m <sup>3</sup> ) - before final cleaning - just before placing concrete	less than or equal to 1025*	Mud Weight (Density) API 13B-1 Section 1
Viscosity (seconds/liter) - during drilling  - before final cleaning - just before placing concrete	34 to 64  less than or equal to 64	Marsh Funnel and Cup API 13B-1 Section 2.2
pH	8 to 10.0	Glass Electrode pH Meter or pH Paper
Sand Content (percent) - before final cleaning - just before placing concrete	less than or equal to 0.5	Sand API 13B-1 Section 5
<p>*When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 32 kg/m<sup>3</sup>. Slurry temperature shall be at least 4°C when tested.</p>		

Shore Pac GCV synthetic slurries shall be tested for conformance to the requirements shown in the following table:

Shore Pac GCV CETCO Drilling Products Group		
PROPERTY	REQUIREMENT	TEST
Density (kg/m <sup>3</sup> ) - before final cleaning - just before placing concrete	less than or equal to 1025*	Mud Weight (Density) API 13B-1 Section 1
Viscosity (seconds/liter) - during drilling  - before final cleaning - just before placing concrete	35 to 78  less than or equal to 60	Marsh Funnel and Cup API 13B-1 Section 2.2
pH	8.0 to 11.0	Glass Electrode pH Meter or pH Paper
Sand Content (percent) - before final cleaning - just before placing concrete	less than or equal to 0.5	Sand API 13B-1 Section 5
<p>*When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 32 kg/m<sup>3</sup>. Slurry temperature shall be at least 4°C when tested.</p>		

Novagel Polymer synthetic slurries shall be tested for conformance to the requirements shown in the following table:

NOVAGEL POLYMER Geo-Tech Drilling Fluids		
PROPERTY	REQUIREMENT	TEST
Density (kg/m <sup>3</sup> ) - during drilling  - before final cleaning - just before placing concrete	less than or equal to 1075*  less than or equal to 1025*	Mud Weight (Density) API 13B-1 Section 1
Viscosity (seconds/liter) - during drilling  - before final cleaning - just before placing concrete	48 to 110  less than or equal to 110	Marsh Funnel and Cup API 13B-1 Section 2.2
pH	6.0 to 11.5	Glass Electrode pH Meter or pH Paper
Sand Content (percent) - before final cleaning - just before placing concrete	less than or equal to 0.5	Sand API 13B-1 Section 5
<p>*When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 32 kg/m<sup>3</sup>. Slurry temperature shall be at least 4°C when tested.</p>		

**Water Slurry**

At the option of the Contractor, water may be used as slurry when casing is used for the entire length of the drilled hole.

Water slurry shall be tested for conformance to the requirements shown in the following table:

WATER SLURRY		
PROPERTY	REQUIREMENT	TEST
Density (kg/m3)  - before final cleaning - just before placing concrete	1017*	Mud Weight (Density) API 13B-1 Section 1
Sand Content (percent)  - before final cleaning - just before placing concrete	less than or equal to 0.5	Sand API 13B-1 Section 5
*When approved by the Engineer, salt water slurry may be used and the allowable densities may be increased up to 32 kg/m3.		

**Construction**

The Contractor shall submit a placing plan to the Engineer for approval prior to producing the test batch for cast-in-drilled-hole concrete piling and at least 10 working days prior to constructing piling. The plan shall include complete descriptions, details, and supporting calculations as listed below:

A. Requirements for all cast-in-drilled-hole concrete piling:

1. Concrete mix design, certified test data, and trial batch reports.
2. Drilling or coring methods and equipment.
3. Proposed method for casing installation and removal when necessary.
4. Plan view drawing of pile showing reinforcement.
5. Methods for placing, positioning, and supporting bar reinforcement.
6. Methods and equipment for accurately determining the depth of concrete and actual and theoretical volume placed, including effects on volume of concrete when any casings are withdrawn.
7. Methods and equipment for verifying that the bottom of the drilled hole is clean prior to placing concrete.
8. Methods and equipment for preventing upward movement of reinforcement, including the Contractor's means of detecting and measuring upward movement during concrete placement operations.

B. Additional requirements when concrete is placed under slurry:

1. Plan view drawing of pile showing inspection pipes.
2. Concrete batching, delivery, and placing systems, including time schedules and capacities therefor. Time schedules shall include the time required for each concrete placing operation at each pile.
3. Concrete placing rate calculations. When requested by the Engineer, calculations shall be based on the initial pump pressures or static head on the concrete and losses throughout the placing system, including anticipated head of slurry and concrete to be displaced.
4. Suppliers' test reports on the physical and chemical properties of the slurry and any proposed slurry chemical additives, including Material Safety Data Sheet.
5. Slurry testing equipment and procedures.
6. Methods of removal and disposal of excavation, slurry, and contaminated concrete, including removal rates.

7. Methods and equipment for slurry agitating, recirculating, and cleaning.

In addition to compressive strength requirements, the consistency of the concrete to be deposited under slurry shall be verified before use by producing a test batch. The test batch shall be produced and delivered to the project under conditions and in time periods similar to those expected during the placement of concrete in the piles. Concrete for the test batch shall be placed in an excavated hole or suitable container of adequate size to allow for testing as specified herein. Depositing of test batch concrete under slurry will not be required. In addition to meeting the specified nominal penetration, the test batch shall meet the following requirements:

- A. For piles where the time required for each concrete placing operation, as submitted in the placing plan, will be 2 hours or less, the test batch shall demonstrate that the proposed concrete mix design achieves either a penetration of at least 50 mm or a slump of at least 125 mm after twice that time has elapsed.
- B. For piles where the time required for each concrete placing operation, as submitted in the placing plan, will be more than 2 hours, the test batch shall demonstrate that the proposed concrete mix design achieves either a penetration of at least 50 mm or a slump of at least 125 mm after that time plus 2 hours has elapsed.

The time period shall begin at the start of placement. The concrete shall not be vibrated or agitated during the test period. Penetration tests shall be performed in conformance with the requirements in California Test 533. Slump tests shall be performed in conformance with the requirements in ASTM Designation: C 143/C143M. Upon completion of testing, the concrete shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

The concrete deposited under slurry shall be carefully placed in a compact, monolithic mass and by a method that will prevent washing of the concrete. Concrete deposited under slurry need not be vibrated. Placing concrete shall be a continuous operation lasting not more than the time required for each concrete placing operation at each pile, as submitted in the placing plan, unless otherwise approved in writing by the Engineer. The concrete shall be placed with concrete pumps and delivery tube system of adequate number and size to complete the placing of concrete in the time specified. The delivery tube system shall consist of one of the following:

- A. A tremie tube or tubes, each of which are at least 250 mm in diameter, fed by one or more concrete pumps.
- B. One or more concrete pump tubes, each fed by a single concrete pump.

The delivery tube system shall consist of watertight tubes with sufficient rigidity to keep the ends always in the mass of concrete placed. If only one delivery tube is utilized to place the concrete, the tube shall be placed near the center of the drilled hole. Multiple tubes shall be uniformly spaced in the hole. Internal bracing for the steel reinforcing cage shall accommodate the delivery tube system. Tremies shall not be used for piles without space for a 250 mm-inch tube.

Spillage of concrete into the slurry during concrete placing operations shall not be allowed. Delivery tubes shall be capped with a watertight cap, or plugged above the slurry level with a good quality, tight fitting, moving plug that will expel the slurry from the tube as the tube is charged with concrete. The cap or plug shall be designed to be released as the tube is charged. The pump discharge or tremie tube shall extend to the bottom of the hole before charging the tube with concrete. After charging the delivery tube system with concrete, the flow of concrete through a tube shall be induced by slightly raising the discharge end. During concrete placement, the tip of the delivery tube shall be maintained as follows to prevent reentry of the slurry into the tube. Until at least 3 m of concrete has been placed, the tip of the delivery tube shall be within 150 mm of the bottom of the drilled hole, and then the embedment of the tip shall be maintained at least 3 m below the top surface of the concrete. Rapid raising or lowering of the delivery tube shall not be permitted. If the seal is lost or the delivery tube becomes plugged and must be removed, the tube shall be withdrawn, the tube cleaned, the tip of the tube capped to prevent entrance of the slurry, and the operation restarted by pushing the capped tube 3 m into the concrete and then reinitiating the flow of concrete.

When slurry is used, a fully operational standby concrete pump, adequate to complete the work in the time specified, shall be provided at the site during concrete placement. The slurry level shall be maintained within 300 mm of the top of the drilled hole.

A log of concrete placement for each drilled hole shall be maintained by the Contractor when concrete is deposited under slurry. The log shall show the pile location, tip elevation, dates of excavation and concrete placement, total quantity of concrete deposited, length and tip elevation of any casing, and details of any hole stabilization method and materials used. The log shall include a 215 mm x 280 mm sized graph of the concrete placed versus depth of hole filled. The graph shall be plotted continuously throughout placing of concrete. The depth of drilled hole filled shall be plotted vertically with the pile tip oriented at the bottom and the quantity of

concrete shall be plotted horizontally. Readings shall be made at least at each 1.5 m of pile depth, and the time of the reading shall be indicated. The graph shall be labeled with the pile location, tip elevation, cutoff elevation, and the dates of excavation and concrete placement. The log shall be delivered to the Engineer within one working day of completion of placing concrete in the pile.

After placing reinforcement and prior to placing concrete in the drilled hole, if drill cuttings settle out of the slurry, the bottom of the drilled hole shall be cleaned. The Contractor shall verify that the bottom of the drilled hole is clean.

If temporary casing is used, concrete placed under slurry shall be maintained at a level at least 1.5 m above the bottom of the casing. The withdrawal of casings shall not cause contamination of the concrete with slurry.

Material resulting from using slurry shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

### **Acceptance Testing and Mitigation**

Vertical inspection pipes for acceptance testing shall be provided in all cast-in-drilled-hole concrete piles that are 600 mm in diameter or larger, except when the holes are dry or when the holes are dewatered without the use of temporary casing to control ground water.

Inspection pipes shall be Schedule 40 polyvinyl chloride pipes with a nominal inside diameter of 50 mm. Each inspection pipe shall be capped top and bottom and shall have watertight couplers to provide a clean, dry and unobstructed 50-mm-diameter clear opening from 1 m above the pile cutoff down to the bottom of the reinforcing cage.

Inspection pipes shall be placed around the pile, inside the outermost spiral or hoop reinforcement, and 75 mm clear of the vertical reinforcement, at a uniform spacing not exceeding 840 mm measured along the circle passing through the centers of inspection pipes. A minimum of 2 inspection pipes per pile shall be used. When the vertical reinforcement is not bundled and each bar is not more than 26 mm in diameter, inspection pipes may be placed 50 mm clear of the vertical reinforcement. The inspection pipes shall be placed to provide the maximum diameter circle that passes through the centers of the inspection pipes while maintaining the clear spacing required herein. The pipes shall be installed in straight alignment, parallel to the main reinforcement, and securely fastened in place to prevent misalignment during installation of the reinforcement and placing of concrete in the hole.

The Contractor shall log the location of the inspection pipe couplers with respect to the plane of pile cut off, and these logs shall be delivered to the Engineer upon completion of the placement of concrete in the drilled hole.

After placing concrete and before requesting acceptance tests, each inspection pipe shall be tested by the Contractor in the presence of the Engineer by passing a 48.3-mm-diameter rigid cylinder 610 mm long through the complete length of pipe. If the 48.3-mm -diameter rigid cylinder fails to pass any of the inspection pipes, the Contractor shall attempt to pass a 32-mm-diameter rigid cylinder 1.375 m long through the complete length of those pipes in the presence of the Engineer. If an inspection pipe fails to pass the 32-mm -diameter cylinder, the Contractor shall immediately fill all inspection pipes in the pile with water.

The Contractor shall replace each inspection pipe that does not pass the 32-mm -diameter cylinder with a 50.8-mm-diameter hole cored through the concrete for the entire length of the pile. Cored holes shall be located as close as possible to the inspection pipes they are replacing and shall be no more than 150 mm inside the reinforcement. Coring shall not damage the pile reinforcement. Cored holes shall be made with a double wall core barrel system utilizing a split tube type inner barrel. Coring with a solid type inner barrel will not be allowed. Coring methods and equipment shall provide intact cores for the entire length of the pile concrete. The coring operation shall be logged by an Engineering Geologist or Civil Engineer licensed in the State of California and experienced in core logging. Coring logs shall include complete descriptions of inclusions and voids encountered during coring, and shall be delivered to the Engineer upon completion. Concrete cores shall be preserved, identified with the exact location the core was recovered from within the pile, and made available for inspection by the Engineer.

Acceptance tests of the concrete will be made by the Engineer, without cost to the Contractor. Acceptance tests will evaluate the homogeneity of the placed concrete. Tests will include gamma-gamma logging. Tests may also include crosshole sonic logging and other means of inspection selected by the Engineer. The Contractor shall not conduct operations within 8.0 m of the gamma-gamma logging operations. The Contractor shall separate reinforcing steel as necessary to allow the Engineer access to the inspection pipes to perform gamma-gamma logging or other acceptance testing. After requesting acceptance tests and providing access to the piling, the Contractor shall allow 25 days for the Engineer to conduct these tests and make determination of acceptance if the 48.3-mm-diameter cylinder passed all inspection pipes, and 30 days if only the 32-mm -diameter cylinder passed all inspection pipes. Should the Engineer fail to complete these tests within the time allowance, and if in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in

inspection, the delay will be considered a right of way delay as specified in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

All inspection pipes and cored holes in a pile shall be dewatered and filled with grout after notification by the Engineer that the pile is acceptable. Placement and removal of water in the inspection pipes shall be at the Contractor's expense. Grout shall conform to the provisions in Section 50-1.09, "Bonding and Grouting," of the Standard Specifications. The inspection pipes and holes shall be filled using grout tubes that extend to the bottom of the pipe or hole or into the grout already placed.

If acceptance testing performed by the Engineer determines that a pile does not meet the requirements of the specifications, then that pile will be rejected and all depositing of concrete under slurry or concrete placed using temporary casing for the purpose of controlling groundwater shall be suspended until written changes to the methods of pile construction are approved in writing by the Engineer.

The Contractor shall submit to the Engineer for approval a mitigation plan for repair, supplementation, or replacement for each rejected cast-in-drilled-hole concrete pile, and this plan shall conform to the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. Prior to submitting this mitigation plan, the Engineer will hold a repair feasibility meeting with the Contractor to discuss the feasibility of repairing rejected piling. The Engineer will consider the size of the defect, the location of the defect, and the design information and corrosion protection considerations for the pile. This information will be made available to the Contractor, if appropriate, for the development of the mitigation plan. If the Engineer determines that it is not feasible to repair the rejected pile, the Contractor shall not include repair as a means of mitigation and shall proceed with the submittal of a mitigation plan for replacement or supplementation of the rejected pile.

If the Engineer determines that a rejected pile does not require mitigation due to structural, geotechnical, or corrosion concerns, the Contractor may elect to 1) repair the pile per the approved mitigation plan, or 2) not repair anomalies found during acceptance testing of that pile. For such unrepaired piles, the Contractor shall pay to the State, \$400 per cubic meter for the portion of the pile affected by the anomalies. The volume, in cubic meters, of the portion of the pile affected by the anomalies, shall be calculated as the area of the cross section of the pile affected by each anomaly, in square meters, as determined by the Engineer, multiplied by the distance, in meters, from the top of each anomaly to the specified tip of the pile. If the volume calculated for one anomaly overlaps the volume calculated for additional anomalies within the pile, the calculated volume for the overlap shall only be counted once. In no case shall the amount of the payment to the State for any such pile be less than \$400. The Department may deduct the amount from any moneys due, or that may become due the Contractor under the contract.

Pile mitigation plans shall include the following:

- A. The designation and location of the pile addressed by the mitigation plan.
- B. A review of the structural, geotechnical, and corrosion design requirements of the rejected pile.
- C. A step by step description of the mitigation work to be performed, including drawings if necessary.
- D. An assessment of how the proposed mitigation work will address the structural, geotechnical, and corrosion design requirements of the rejected pile.
- E. Methods for preservation or restoration of existing earthen materials.
- F. A list of affected facilities, if any, with methods and equipment for protection of these facilities during mitigation.
- G. The State assigned contract number, bridge number, full name of the structure as shown on the contract plans, District-County-Route-Post Mile, and the Contractor's (and Subcontractor's if applicable) name on each sheet.
- H. A list of materials, with quantity estimates, and personnel, with qualifications, to be used to perform the mitigation work.
- I. The seal and signature of an engineer who is licensed as a Civil Engineer by the State of California.

For rejected piles to be repaired, the Contractor shall submit a pile mitigation plan that contains the following additional information:

- A. An assessment of the nature and size of the anomalies in the rejected pile.
- B. Provisions for access for additional pile testing if required by the Engineer.

For rejected piles to be replaced or supplemented, the Contractor shall submit a pile mitigation plan that contains the following additional information:

- A. The proposed location and size of additional piling.



- B. Structural details and calculations for any modification to the structure to accommodate the replacement or supplemental piling.

All provisions for cast-in-drilled-hole concrete piling shall apply to replacement piling.

The Contractor shall allow the Engineer 25 days to review the mitigation plan after a complete submittal has been received.

Should the Engineer fail to review the complete pile mitigation submittal within the time specified, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the pile mitigation plan, an extension of time commensurate with the delay in completion of the work thus caused will be granted in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

When repairs are performed, the Contractor shall submit a mitigation report to the Engineer within 10 days of completion of the repair. This report shall state exactly what repair work was performed and quantify the success of the repairs relative to the submitted mitigation plan. The mitigation report shall be stamped and signed by an engineer that is licensed as a Civil Engineer by the State of California. The mitigation report shall show the State assigned contract number, bridge number, full name of the structure as shown on the contract plans, District-County-Route-Post Mile, and the Contractor (and subcontractor if applicable) name on each sheet. The Engineer will be the sole judge as to whether a mitigation proposal is acceptable, the mitigation efforts are successful, and to whether additional repairs, removal and replacement, or construction of a supplemental foundation is required.

#### **MEASUREMENT AND PAYMENT (PILING)**

Full compensation for cast-in-drilled-hole concrete piling required by the various electrical items shall be considered as included in the contract price paid for the various electrical items requiring the cast-in-drilled-hole concrete pile foundation and no separate payment will be made therefor.

Full compensation for slurry, depositing concrete under slurry, test batches, inspection pipes, filling inspection holes and pipes with grout, drilling oversized cast-in-drilled-hole concrete piling, filling cave-ins and oversized piles with concrete, and redrilling through concrete, shall be considered as included in the contract prices paid per meter for cast-in-drilled-hole concrete piling of the types and sizes listed in the Engineer's Estimate, and no additional compensation will be allowed therefor.

#### **10-1.48 PRESTRESSING CONCRETE**

Prestressing concrete shall conform to the provisions in Section 50, "Prestressing Concrete," of the Standard Specifications and these special provisions.

Full compensation for prestressing cast-in-place concrete at the existing Pier 4L and Pier 4R retrofit footings, including furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in furnishing, placing, and tensioning the prestressing steel, shall be considered as included in the contract price paid per cubic meter for structural concrete (bridge footing) and no separate payment will be made therefor.

#### **10-1.49 ROCK TIEDOWN ANCHORS**

Tiedown anchors in bridge footings; consisting of steel bar with anchorage assemblies that are grouted in cored, formed, and drilled holes; shall conform to the provisions in Section 50, "Prestressing Concrete," of the Standard Specifications, these special provisions, and the details shown on the plans.

Whenever "member" is referred to in Section 50, "Prestressing Concrete," of the Standard Specifications it shall be considered to also mean tiedown anchor.

Attention is directed to "Order of Work" of these special provisions regarding the sequence of tiedown installation and footing retrofit construction.

Difficult tiedown installation is anticipated due to the requirements of tiedown embedment into rock.

The Contractor shall determine the bond length necessary to meet acceptance criteria specified herein.

The submittal of reduced prints of corrected original tracings will not be required for tiedown anchor installations.

Alternative details for the anchorage enclosure device may be submitted to the Engineer for approval if necessary to accommodate the anchorage assembly being used.

#### **MATERIALS**

When calculating the minimum cross sectional area of steel bars, the ultimate strength,  $f_{pu}$ , of 1030 MPa for prestressing steel shall be used.

The steel tube and bearing plate of the anchorage assembly and the anchorage enclosure assembly shall conform to the provisions of Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications. The steel tube and bearing plate and the anchorage enclosure shall be galvanized after fabrication.

Grout shall conform to the provisions in Section 50-1.09, "Bonding and Grouting," of the Standard Specifications. The grout will not be required to pass through a screen with a 1.7 mm maximum clear opening prior to being introduced into the grout pump. Fine aggregate may be added to the grout mixture of portland cement and water outside of the grouted sheathing in drilled holes that are 200 mm or greater in diameter, but only to the extent that the cement content of the grout is not less than 500 kg/m<sup>3</sup> of grout. Fine aggregate, if used, shall conform to the provisions in Section 90-2, "Materials," and Section 90-3, "Aggregate Gradings," of the Standard Specifications.

When a bond breaker is shown on the plans near the bearing plate, the bond breaker shall be a 6 mm premolded joint filler conforming to the provisions in Section 51-1.12C, "Premolded Expansion Joint Fillers," of the Standard Specifications.

Smooth and corrugated plastic sheathing, including joints, shall be watertight. Polyvinyl chloride (PVC) sheathing shall conform to ASTM Designation: D 1784, Class 13464-B. High density polyethylene (HDPE) sheathing shall have a density between 0.940 and 0.960-g/cm<sup>3</sup> as measured in accordance with ASTM Designation: D 792, A-2. Corrugated plastic sheathing shall be PVC or HDPE.

The transition between the corrugated plastic sheathing and the anchorage assembly shall be an approved detail that allows stressing to the design force without evidence of distress in the corrugated plastic sheathing.

Corrugated sheathing for bar tendons shall have a nominal wall thickness of 1.0 mm.

Strand type tendons shall not be used.

## CONSTRUCTION

Tiedown anchors shall be installed in accordance with the manufacturer's recommendations. In case of a conflict between the manufacturer's recommendations and these special provisions, these special provisions shall prevail.

Water and grout from tiedown anchor construction operations shall not be permitted to flow into waterways. Excessive amounts of water shall not be used in any of the drilling and the tiedown anchor installation procedures.

The holes drilled in the foundation materials shall be drilled to a depth sufficient to provide the necessary bond length beyond the minimum unbonded length shown on the plans. The diameter of the hole shall be large enough to provide a minimum of 25 mm grout cover over the corrugated plastic sheathing for the full-length of the tendon. Centralizers shall be used full-length of the tendon.

Tiedown anchor holes in foundation material shall be drilled by either the rotary or percussion drilling method.

Prior to installing each tiedown anchor into the anchor hole, the anchor shall be clean and free of oil, grease, dirt, or other extraneous substance.

The transition between the corrugated plastic sheathing and the anchorage assembly shall be an approved detail that allows stressing to the design force without evidence of distress in the corrugated plastic sheathing.

Tiedown anchor steel shall be protected prior to completion of all grouting against rust, corrosion, and physical damage in conformance with the provisions in Section 50, "Prestressing Concrete," of the Standard Specifications. In addition, there shall be no evidence of distress in the plastic sheathing or crushing of the cement grout within the sheathing.

Pregrouting shall occur at least 48 hours before placing the tendon in the drilled hole.

Tiedown anchor grout placed in the drilled hole shall be placed using grout tubes.

Grout for all stages shall be injected at the low end of the void being filled and shall be expelled at the high end until there is no evidence of entrapped air, water, or diluted grout.

After initial grouting, the tiedown anchor shall remain undisturbed until the grout has reached a strength sufficient to provide anchorage during load testing.

Secondary grouting shall be completed after the tiedown anchor has been locked off at the required load.

The bar tendons in the unbonded area shall be sheathed with smooth plastic that extends into the steel tube of the permanent tiedown anchorage assembly, as shown on the plans. For this portion of smooth sheathing there is no minimum wall thickness and the sheathing shall be either PVC or HDPE.

In addition, bar tendons shall be sheathed full-length with corrugated plastic. The annular space between the bar and the corrugated sheathing shall be pregouted prior to placing the tendons in the drilled hole.

There shall be a seal between the smooth sheathing and the corrugated sheathing at the top and bottom of the length of smooth sheathing.

For bar tendons, the initial grout in the drilled hole may be placed before or after insertion of the bar tendons.

For drilled holes 150 mm in diameter or less, the initial grouting outside of the corrugated plastic sheathing shall extend to 150 mm above the limits of the bonded length.

**Testing**

All tiedowns shall be load tested by either a performance test or a proof test. The magnitude of applied test loads shall be determined with a calibrated pressure gauge or a load cell. Movements of the end of the tiedown anchor, relative to an independent fixed reference point, shall be measured and recorded to the nearest 0.025-mm at each load increment during the load tests. The Contractor shall perform the measuring and recording.

At the completion of testing tiedown anchors, or when requested by the Engineer, the Contractor shall furnish to the Engineer complete test results for each tiedown anchor tested. Data for each test shall list key personnel, test loading equipment, tiedown anchor location, hole diameter, method of drilling, and bonded and unbonded length of tiedown anchor. Test data shall also list quantity of grout and grout pressure used within the bonded length of the tiedown anchor, amount of ground water encountered, the time and dates of drilling, tiedown anchor installation, grouting, and testing. The tiedown anchor end movements at each increment of load or at each increment of time during the load hold period of the loading schedule shall be included in the test data.

Load testing shall be performed against temporary bearing yokes that bear directly against the permanent bearing plate. Tiedown anchors shall not be stressed against new footing concrete until the concrete has attained a compressive strength of 27 MPa. Temporary yokes shall remain the property of the Contractor.

A minimum of 2 tiedown anchors shall be performance tested at each retrofit footing. The Engineer shall determine the location of the tiedown anchors to be performance tested.

The performance test or proof test shall be conducted by measuring the test load applied to the tiedown anchor and recording the tiedown anchor end movement (measured at the end of the tiedown anchor) during incremental loading and unloading the tiedown anchor in accordance with the loading schedule. The test load shall be held constant for 10 minutes. During the load hold, the movement of the end of the tiedown anchor shall be measured at 1, 2, 3, 4, 5, 6, and 10 minutes. If the total recorded movement between one minute and 10 minutes exceeds 1.0 mm, the test load shall be held for an additional 50 minutes. Total movement shall be measured at 15, 20, 25, 30, 45, and 60 minutes. If the load is held for 60 minutes, a creep curve showing the creep movement between one minute and 60 minutes shall be plotted as a function of the logarithm of time.

LOADING SCHEDULES		
PERFORMANCE TEST	PROOF TEST	
	(CONT'D)	
AL	AL	AL
0.20T	0.20T	0.20T
AL	0.40T	0.40T
0.20T	0.60T	0.60T
0.40T	0.80T	0.80T
AL	1.00T (TEST LOAD)	1.00T (TEST LOAD)
0.20T	AL	AL
0.40T		
0.60T		
AL		
0.20T		
0.40T		
0.60T		
0.80T		
(CONT'D)		
T = Design force for the tiedown anchor shown on the plans. AL = Alignment load = 0.10T		

For performance and proof tests, each increment of load shall be applied in less than one minute and held for at least one minute but not more than 2 minutes or as specified above. The observation period for the load hold shall start when the pump begins to apply the last increment of load.

The jacking equipment, including the tiedown anchor movement measuring system, shall be stable during all phases of the tiedown anchor loading operations.

All tiedown anchors not performance tested shall be proof tested. If 1.0 times the design force cannot be obtained, the tiedown anchor shall be replaced. Tiedown anchors shall not be retested unless the tiedown bond length is post-grouted after the unacceptable test.

A performance tested or proof tested tiedown anchor shall conform to the following acceptance criteria:

- A. The measured elastic movement of the end of the tiedown tendon exceeds 0.80 of the theoretical elongation of the unbonded length plus the jacking length at the maximum test load; and
- B. The creep movement of the end of the tiedown anchor, between one and 10 minutes, is less than 1.0 mm.

Performance tested or proof tested tiedowns that fail to meet the acceptance criterion Number 2 will be acceptable if the maximum load is held for 60 minutes and the creep curve plotted from the movement data indicates a creep rate of less than 2.0 mm for the last log cycle of time between 6 and 60 minutes.

### **Lock-off**

After successful testing of the tiedown anchors, the tiedown anchors shall be locked off at a force equal to 20% "T". The lock-off force is the load on the jacks that is maintained while the tiedown anchor head or anchor nuts on the tiedown anchor are permanently set. Immediately after lock-off, a lift-off test shall be performed to demonstrate that the specified lock-off force was obtained. Adjustments in the shim thickness shall be made if required to achieve the specified lock-off force.

After lock-off, the grout shall be extended to the secondary grout level shown on the plans. At least 24 hours after the secondary grout has set, the remaining void in the steel tube and bearing plate shall be filled with grout. Grout shall be injected at the low end and expelled at the high end until there is no evidence of entrapped air or water. A minimum grout head of 600 mm shall be maintained until the grout has set.

The tiedown anchor head or anchor nuts shall be enclosed with a grouted anchorage enclosure device. After grouting the steel tube, the bearing plate surface shall be cleaned, sealant placed, and the anchorage enclosure bolted in place. After bolting the anchorage enclosure in place the void in the anchorage enclosure shall be filled with grout by injecting grout at the low end of the void and venting at the high end. Any holes in the top of the anchorage enclosure used for grout placement shall be cleaned and sealed with sealant. Sealant shall be a non-sag polysulfide or polyurethane sealing compound conforming to the requirements in ASTM Designation: C 920.

### **MEASUREMENT AND PAYMENT**

No payment will be made for tiedown anchors that do not pass the specified testing requirements.

Tiedown anchors will be measured and paid for by the unit, and the number for payment will be determined by the requirements of the details shown on the plans. No change in the number of tiedown anchors to be paid for will be made because of the use by the Contractor of an alternative number of tiedown anchors.

The contract unit price paid for rock tiedown anchor shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the tiedown anchors (including testing), complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for coring concrete shall be considered as included in the contract unit price paid for rock tiedown anchors and no separate payment will be made therefor.

### **10-1.50 CONCRETE STRUCTURES**

Portland cement concrete structures shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

Attention is directed to "Temporary Decking" of these special provisions regarding reconstruction of existing deck joints.

#### **GENERAL**

Shotcrete shall not be used as an alternative construction method for reinforced concrete members unless otherwise specified.

When a roughened concrete surface is shown on the plans, the existing concrete surface shall be roughened to a full amplitude of approximately 6 mm by abrasive blasting, water blasting, or mechanical equipment.

Plastic pipe located at vertical drains used behind retaining walls, including horizontal or sloping drains down slopes and across sidewalk areas, shall be polyvinyl chloride (PVC) plastic pipe, Schedule 80, conforming to the

provisions for pipe for edge drains and edge drain outlets in Section 68-3.02, "Materials," of the Standard Specifications. The vertical drain pipe shall be rigidly supported in place during backfilling operations.

#### **HIGH EARLY STRENGTH CONCRETE**

High early strength concrete, where shown on the plans, shall conform to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and "Replace Bearing" of these special provisions. The Contractor may use Type III cement and a nonchloride Type C chemical admixture.

#### **FALSEWORK**

Falsework shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

The use of sand jacks for falsework grading and removal is not permitted.

The use of center pick beam tongs for hoisting of falsework beams is prohibited. No loads shall be hoisted over traffic.

Temporary crash cushion modules, as shown on the plans and conforming to the provisions in "Temporary Crash Cushion Module" of these special provisions, shall be installed at the approach end of temporary railings which are located less than 4.6 m from the edge of a traffic lane. For 2-way traffic openings, temporary crash cushion modules shall be installed at the departing end of temporary railings which are located less than 1.8 m from the edge of a traffic lane.

The Contractor's engineer who signs the falsework drawings shall also certify in writing that the falsework is constructed in conformance with the approved drawings and the contract specifications prior to placing concrete. This certification shall include performing any testing necessary to verify the ability of the falsework members to sustain the stresses required by the falsework design. The engineer who signs the drawings may designate a representative to perform this certification. Where falsework contains openings for railroads, vehicular traffic, or pedestrians, the designated representative shall be qualified to perform this work, shall have at least three years of combined experience in falsework design or supervising falsework construction, and shall be registered as a Civil Engineer in the State of California. For other falsework, the designated representative shall be qualified to perform this work and shall have at least three years of combined experience in falsework design or supervising falsework construction. The Contractor shall certify the experience of the designated representative in writing and provide supporting documentation demonstrating the required experience if requested by the Engineer.

#### **Welding and Nondestructive Testing**

Welding of steel members, except for previously welded splices and except for when fillet welds are used where load demands are less than or equal to 175 N/mm for each 3 mm of fillet weld, shall conform to AWS D1.1 or other recognized welding standard. The welding standard to be utilized shall be specified by the Contractor on the working drawings. Previously welded splices for falsework members are defined as splices made prior to the member being shipped to the project site.

Splices made by field welding of steel beams at the project site shall undergo nondestructive testing (NDT). At the option of the Contractor, either ultrasonic testing (UT) or radiographic testing (RT) shall be used as the method of NDT for each field weld and any repair made to a previously welded splice in a steel beam. Testing shall be performed at locations selected by the Contractor. The length of a splice weld where NDT is to be performed, shall be a cumulative weld length equal to 25 percent of the original splice weld length. The cover pass shall be ground smooth at the locations to be tested. The acceptance criteria shall conform to the requirements of AWS D1.1, Section 6, for cyclically loaded nontubular connections subject to tensile stress. If repairs are required in a portion of the weld, additional NDT shall be performed on the repaired sections. The NDT method chosen shall be used for an entire splice evaluation including any required repairs.

For all field welded splices, the Contractor shall furnish to the Engineer a letter of certification which certifies that all welding and NDT, including visual inspection, are in conformance with the specifications and the welding standard shown on the approved working drawings. This letter of certification shall be signed by an engineer who is registered as a Civil Engineer in the State of California and shall be provided prior to placing any concrete for which the falsework is being erected to support.

For previously welded splices, the Contractor shall determine and perform all necessary testing and inspection required to certify the ability of the falsework members to sustain the stresses required by the falsework design. This welding certification shall (1) itemize the testing and inspection methods used, (2) include the tracking and identifying documents for previously welded members, (3) be signed by an engineer who is registered as a Civil Engineer in the State of California, (4) and shall be provided prior to erecting the members.

## **PIER COLUMNS**

Attention is directed to the provisions in "Earthwork" of these special provisions regarding excavation for pier columns.

Concrete for pier columns shall be Class 1 concrete.

Concrete for pier columns shall be placed against firm, undisturbed foundation materials on the bottom and sides of the pier column excavations. Immediately before placing concrete, all excavated surfaces against which the concrete is to be placed shall be free from standing water, mud, debris, and loose material.

Shoring, lagging, casings, liners, or other bracing shall be removed before or during placement of concrete to the extent specified under "Earthwork" of these special provisions.

The horizontal limit of payment for structural concrete, pier column shall be vertical planes at the neat lines of the pier columns as shown on the plans. The bottom limit shall be the bottom of the foundation excavation in the completed work. The upper limit shall be the top of the pier column concrete as shown on the plans.

## **DECK CLOSURE POURS**

Where a deck closure pour is shown on the plans, reinforcement protruding into the closure space and forms for the closure pour shall conform to the following:

- A. During the time of placement of concrete in the deck, other than for the closure pour itself, reinforcing steel which protrudes into the closure space shall be completely free from any connection to the reinforcing steel, concrete, or other attachments of the adjacent structure, including forms. The reinforcing steel shall remain free of any connection for a period of not less than 24 hours following completion of the pour.
- B. Forms for the closure pour shall be supported from the superstructure on both sides of the closure space.

## **ELASTOMERIC BEARING PADS**

Elastomeric bearing pads shall conform to the provisions in Section 51-1.12H, "Elastomeric Bearing Pads," of the Standard Specifications and these special provisions.

Fabric reinforced elastomeric bearing pads shall not be used.

Releasing of the superstructure onto the new bearing pads must occur while the ambient air temperature is between 5°C and 26°C.

## **MEASUREMENT AND PAYMENT**

Measurement and payment for concrete in structures shall conform to the provisions in Section 51-1.22, "Measurement," and Section 51-1.23, "Payment," of the Standard Specifications and these special provisions.

Full compensation for roughening existing concrete surfaces to a full amplitude of approximately 6 mm, where shown on the plans, shall be considered as included in the contract price paid per cubic meter for structural concrete, bridge and no separate payment will be made therefor.

Full compensation for furnishing and installing plastic pipe located at vertical drains used behind retaining walls and bridge abutments, including horizontal or sloping drains down slopes, including excavation and backfill involved in placing the plastic pipe, shall be considered as included in the contract price paid per cubic meter for the various items of concrete work involved and no separate payment will be made therefor.

### **10-1.51 STRUCTURE APPROACH SLABS (TYPE N)**

This work shall consist of constructing reinforced concrete approach slabs, structure approach drainage system, and treated permeable base at structure approaches in conformance with the details shown on the plans, the provisions in Section 51, "Concrete Structures," of the Standard Specifications, and these special provisions.

## **GENERAL**

Attention is directed to "Engineering Fabrics" of these special provisions.

## **STRUCTURE APPROACH DRAINAGE SYSTEM**

### **Geocomposite Drain**

Geocomposite drain shall consist of a manufactured core not less than 6.35 mm thick nor more than 50 mm thick with one or both sides covered with a layer of filter fabric that will provide a drainage void. The drain shall

produce a flow rate through the drainage void of at least 25 liters per minute per meter of width at a hydraulic gradient of 1.0 and a minimum externally applied pressure of 168 kPa. A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications shall be furnished for the geocomposite drain certifying that the drain complies with these special provisions. The Certificate of Compliance shall be accompanied by a flow capability graph for the geocomposite drain showing flow rates and the externally applied pressures and hydraulic gradients. The flow capability graph shall be stamped with the verification of an independent testing laboratory.

Filter fabric for the geocomposite drain shall conform to the provisions for filter fabric for underdrains in Section 88, "Engineering Fabrics," of the Standard Specifications.

The manufactured core shall be either a preformed grid of embossed plastic, a mat of random shapes of plastic fibers, a drainage net consisting of a uniform pattern of polymeric strands forming 2 sets of continuous flow channels, or a system of plastic pillars and interconnections forming a semirigid mat.

The core material and filter fabric shall be capable of maintaining the drainage void for the entire height of geocomposite drain. Filter fabric shall be integrally bonded to the side of the core material with the drainage void. Core material manufactured from impermeable plastic sheeting having non-connecting corrugations shall be placed with the corrugations approximately perpendicular to the drainage collection system.

The geocomposite drain shall be installed with the drainage void and the filter fabric facing the embankment. The fabric facing the embankment side shall overlap a minimum of 75 mm at all joints and wrap around the exterior edges a minimum of 75 mm beyond the exterior edge. If additional fabric is needed to provide overlap at joints and wraparound at edges, the added fabric shall overlap the fabric on the geocomposite drain at least 150 mm and be attached thereto.

Should the fabric on the geocomposite drain be torn or punctured, the damaged section shall be replaced completely or repaired by placing a piece of fabric that is large enough to cover the damaged area and provide a 150 mm overlap.

#### **Plastic Pipe**

Plastic pipe shall conform to the provisions for pipe for edge drains and edge drain outlets in Section 68-3, "Edge Drains," of the Standard Specifications.

#### **Drainage Pads**

Concrete for use in drainage pads shall be minor concrete, except the concrete shall contain not less than 300 kilograms of cementitious material per cubic meter.

#### **Treated Permeable Base At Bottom Of Geocomposite Drains**

Treated permeable base to be placed around the slotted plastic pipe at the bottom of geocomposite drains shall conform to the provisions in "Treated Permeable Base Under Approach Slab." If asphalt treated permeable base is used, it shall be placed at a temperature of not less than 82°C nor more than 110°C.

The filter fabric to be placed over the treated permeable base at the bottom of geocomposite drains shall conform to the provisions for filter fabric for edge drains in Section 88, "Engineering Fabrics," of the Standard Specifications.

### **ENGINEERING FABRICS**

Filter fabric to be placed between the structure approach embankment material and the treated permeable base shall conform to the provisions for filter fabric for edge drains in Section 88, "Engineering Fabrics," of the Standard Specifications and these special provisions.

The subgrade to receive the filter fabric, immediately prior to placing, shall conform to the compaction and elevation tolerance specified for the material involved.

Filter fabric shall be aligned, handled, and placed in a wrinkle-free manner in conformance with the manufacturer's recommendations.

Adjacent borders of the filter fabric shall be overlapped from 300 to 450 mm or stitched. The preceding roll shall overlap the following roll in the direction the material is being spread or shall be stitched. When the fabric is joined by stitching, it shall be stitched with yarn of a contrasting color. The size and composition of the yarn shall be as recommended by the fabric manufacturer. The number of stitches per 25 mm of seam shall be 5 to 7.

Equipment or vehicles shall not be operated or driven directly on the filter fabric.

## **TREATED PERMEABLE BASE UNDER APPROACH SLAB**

Treated permeable base under structure approach slabs shall consist of constructing either an asphalt treated permeable base or a cement treated permeable base in accordance with Section 29, "Treated Permeable Bases," of the Standard Specifications and these special provisions.

The type of treatment to be used shall be at the option of the Contractor.

The Contractor shall notify the Engineer in writing, not less than 30 days prior to the start of placing the treated permeable base, which type of treated permeable base will be furnished. Once the Contractor has notified the Engineer of the selection, the type to be furnished shall not be changed without a prior written request to do so and approval thereof in writing by the Engineer.

Asphalt treated permeable base shall be placed at a temperature of not less than 93°C nor more than 121°C. Material stored in excess of 2 hours shall not be used in the work.

Asphalt treated permeable base material may be spread in one layer. The base material shall be compacted with a vibrating shoe type compactor or rolled with a roller weighing at least 1.3 tonnes but no more than 4.5 tonnes. Rolling shall begin as soon as the mixture has cooled sufficiently to support the weight of the rolling equipment without undue displacement.

Cement treated permeable base material may be spread in one layer. The base material shall be compacted with either a vibrating shoe type compactor or with a steel-drum roller weighing at least 1.3 tonnes but no more than 4.5 tonnes. Compaction shall begin within one-half hour after the spreading operation and shall consist of 2 complete coverages of the treated material.

## **APPROACH SLABS**

Concrete for use in approach slabs shall contain not less than 400 kilograms of cementitious material per cubic meter and shall be air entrained as provided in "Materials" of these special provisions.

The steel angle at the concrete barrier joint shall conform to the provision in Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications.

Structure approach slabs shall be cured for not less than 5 days prior to opening to public traffic, unless, at the option of the Contractor, the structure approach slabs are constructed using concrete with a nonchloride Type C chemical admixture conforming to these special provisions.

Portland cement for use in concrete using a nonchloride Type C chemical admixture shall be Type II or Type III conforming to the provisions in Section 90-2.01, "Cementitious Materials," of the Standard Specifications. Mortar containing the Type II portland cement to be used and Ottawa sand shall not contract in air more than 0.053 percent when tested in conformance with California Test 527.

The nonchloride Type C chemical admixture, approved by the Engineer, shall conform to the requirements in ASTM Designation: C 494/C 494M and Section 90-4, "Admixtures," of the Standard Specifications.

The concrete with nonchloride Type C chemical admixture shall be prequalified prior to placement in conformance with the provisions for prequalification of concrete specified by compressive strength in Section 90-9.01, "General," of the Standard Specifications and the following:

- A. Immediately after fabrication of the 5 test cylinders, the cylinders shall be stored in a temperature medium of  $21^{\circ}\text{C} \pm 1.5^{\circ}\text{C}$  until the cylinders are tested.
- B. The 6-hour average strength of the 5 test cylinders shall not be less than 5.85 MPa. Not more than 2 test cylinders shall have a strength of less than 5.5 MPa.

The top surface of approach slabs shall be finished and treated in conformance with the provisions for decks in Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications. Edges of slabs shall be edger finished.

Approach slabs shall be cured with pigmented curing compound (1) in conformance with the provisions for curing structures in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications.

Structure approach slabs constructed using concrete with a nonchloride Type C chemical admixture shall be cured for not less than 6 hours prior to opening to public traffic. The curing period shall be considered to begin at the start of discharge of the last truckload of concrete to be used in the slab.

If the ambient temperature is below 18°C during the curing period for approach slabs using concrete with a nonchloride Type C chemical admixture, an insulating layer or blanket shall be used to cover the surface. The insulating layer or blanket shall have an R-value rating given in the table below. At the Contractor's option, a heating tent may be used in lieu of or in combination with the insulating layer or blanket.



Temperature Range During Curing Period	R-value, minimum
13°C to 18°C	1
7°C to 13°C	2
4°C to 7°C	3

## JOINTS

Hardboard and expanded polystyrene shall conform to the provisions in Section 51-1.12D, "Sheet Packing, Preformed Pads, and Board Fillers," of the Standard Specifications.

Type AL joint seals shall conform to the provisions in Section 51-1.12F, "Sealed Joints" of the Standard Specifications. The sealant may be mixed by hand-held, power-driven agitators and placed by hand methods.

The pourable seal between the steel angle and concrete barrier shall conform to the requirements for Type A and AL seals in Section 51-1.12F(3), "Materials and Installation," of the Standard Specifications. The sealant may be mixed by hand-held, power-driven agitators and placed by hand methods. Immediately prior to placing the seal, the joint shall be thoroughly cleaned, including abrasive blast cleaning of the concrete surfaces, so that all foreign material and concrete spillage are removed from all joint surfaces. Joint surfaces shall be dry at the time the seal is placed.

## MEASUREMENT AND PAYMENT

Structural concrete, approach slab (Type N) will be measured and paid for in conformance with the provisions in Section 51-1.22, "Measurement," and Section 51-1.23, "Payment," of the Standard Specifications and these special provisions.

Full compensation for the structure approach drainage system including Type A drains at Abutment 5, geocomposite drain, plastic pipe, drainage pads, treated permeable base, filter fabric, miscellaneous metal, and pourable seals shall be considered as included in the contract price paid per cubic meter for structural concrete, approach slab of the type shown in the Engineer's Estimate, and no additional compensation will be allowed therefor.

### 10-1.52 STRUCTURE APPROACH SLABS (TYPE R)

Structure approach slabs (Type R) consist of removing portions of existing structures, existing pavement and base, and constructing new reinforced concrete approach slabs at structure approaches as shown on the plans and in conformance with these special provisions.

#### GENERAL

The thickness shown on the plans for structure approach slabs is the minimum thickness. The thickness will vary depending on the thickness of the pavement and base materials removed.

The Contractor shall establish a grade line for new approach slabs that will provide a smooth profile grade. The profile grade will be subject to approval by the Engineer.

The Contractor shall schedule his work so that the pavement and base materials removed during a work period are replaced in that same work period with properly finished and cured approach slab concrete before the time the lane is to be opened to public traffic as specified in "Maintaining Traffic" of these special provisions. In the event the existing pavement and base materials are removed and the Contractor is unable to construct, finish, and cure the new approach slab by the time the lane is to be opened to public traffic, the excavation shall be filled with a temporary roadway structural section as specified in this section, "Structure Approach Slabs (Type R)."

#### TEMPORARY ROADWAY STRUCTURAL SECTION

A standby quantity of hot mix asphalt (HMA) and aggregate base equal to the quantity of pavement removed during the work shift shall be provided at the job site for construction of a temporary roadway structural section where existing approaches to structures are being replaced. The temporary structural section shall be maintained and later removed as a first order of work when the Contractor is able to construct and cure the approach slab within the prescribed time limit. The temporary structural section shall consist of a 90 mm thick layer of HMA over aggregate base.

The aggregate base for the temporary structural section shall conform to the requirements specified in "Aggregate Base (Approach Slab)" of these special provisions.

The HMA for the temporary structural section shall be produced from commercial quality aggregates and asphalt binder. The grading of the aggregate shall conform to the 19 mm maximum medium grading in Section 39-

1.02E, "Aggregate," of the Standard Specifications, and the asphalt binder shall conform to the requirements of liquid asphalt SC-800 in Section 93, "Liquid Asphalts," of the Standard Specifications. The amount of asphalt binder to be mixed with the aggregate shall be approximately 0.3 percent less than the optimum bitumen content as determined by California Test 367.

Aggregate base and HMA for the temporary structural section shall be spread and compacted by methods that will produce a well-compacted, uniform base, free from pockets of coarse or fine material and a surfacing of uniform smoothness, texture, and density. The aggregate base and the HMA may each be spread and compacted in one layer. The finished surface of the HMA shall not vary more than 15 mm from the lower edge of a 3.6 m straightedge placed parallel with the centerline and shall match the elevation of the existing pavement and structure along the joints between the existing pavement and structure and the temporary surfacing.

The material from the removed temporary structural section shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications except that removed aggregate base may be stockpiled at the job site and reused for construction of another temporary structural section. When no longer required, standby material or stockpiled material for construction of temporary structural sections shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

### **REMOVING PORTIONS OF EXISTING STRUCTURES**

Attention is directed to "Existing Highway Facilities" of these special provisions.

### **REMOVING EXISTING PAVEMENT AND BASE MATERIALS**

The outline of portland cement concrete to be removed shall be sawed full depth with a power-driven concrete saw.

The outlines of excavations in asphalt concrete shall be cut on a neat line to a minimum depth of 75 mm with a power-driven concrete saw or wheel-type rock cutting excavator before any asphalt concrete material is removed. These excavations shall be permanently or temporarily backfilled to conform to the grade of the adjacent pavement before opening the lane to public traffic. Surplus excavated material may be used as temporary backfill material.

Regardless of the type of equipment used to remove concrete within the sawed outline, power impact tools shall not be used within 0.5 m of the pavement that is required to remain in place.

Materials removed shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

The base material remaining in place after removing the existing pavement and base materials to the required depth shall be graded uniformly, watered, and compacted. The finished surface of the base material at any point shall not extend above the grade approved by the Engineer.

Areas of the base material that are low as a result of over excavation shall be filled, at the Contractor's expense, with treated permeable base at the time and in the same operation that the new treated permeable base is placed.

### **TREATED PERMEABLE BASE UNDER APPROACH SLAB**

Treated permeable base under structure approach slabs shall consist of constructing either an asphalt treated permeable base or a cement treated permeable base in accordance with Section 29, "Treated Permeable Bases," of the Standard Specifications and these special provisions.

The type of treatment to be used shall be at the option of the Contractor.

The Contractor shall notify the Engineer in writing, not less than 30 days prior to the start of placing the treated permeable base, which type of treated permeable base will be furnished. Once the Contractor has notified the Engineer of the selection, the type to be furnished shall not be changed without a prior written request to do so and approval thereof in writing by the Engineer.

Asphalt treated permeable base shall be placed at a temperature of not less than 93°C nor more than 121°C. Material stored in excess of 2 hours shall not be used in the work.

Asphalt treated permeable base material may be spread in one layer. The base material shall be compacted with a vibrating shoe type compactor or rolled with a roller weighing at least 1.3 tonnes but no more than 4.5 tonnes. Rolling shall begin as soon as the mixture has cooled sufficiently to support the weight of the rolling equipment without undue displacement.

Cement treated permeable base material may be spread in one layer. The base material shall be compacted with either a vibrating shoe type compactor or with a steel-drum roller weighing at least 1.3 tonnes but no more than 4.5 tonnes. Compaction shall begin within one-half hour after the spreading operation and shall consist of 2 complete coverages of the treated material.

**REINFORCED CONCRETE MATERIALS**

Reinforced concrete approach slabs shall conform to the provisions for approach slabs in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

The Contractor may use Type III cement in the concrete for structure approach slabs (Type R).

Concrete for use in approach slabs shall contain not less than 400 kg or more than 475 kg of cementitious material per cubic meter and shall be air entrained in conformance with the provisions in "Freezing Condition Requirements" of these special provisions.

Approach slab concrete shall be constructed using rapid strength concrete (RSC). RSC approach slabs shall be constructed using either:

1. Concrete conforming to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and a nonchloride Type C chemical admixture, or
2. Concrete made with proprietary cementitious material. The concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," of the Standard Specifications and the following:
  - 2.1. In lieu of the requirements specified in Section 90-2.01, "Cementitious Materials," of the Standard Specifications, the cementitious material shall meet the definition of hydraulic cement in ASTM C 219 and the following:

**Proprietary Cementitious Material**

Test Description	Test Method	Requirement
Contraction in Air	California Test 527, w/c ratio = 0.39±0.010	0.053%, max.
Mortar Expansion in Water	ASTM C 1038	0.04%, max.
Soluble Chloride*	California Test 422	0.05%, max.
Soluble Sulfate*	California Test 417	0.30%, max.
Thermal Stability	California Test 553	90%, min.
Compressive Strength @ 3 days	ASTM C 109	17.2 MPa

\*Test is to be done on a cube specimen fabricated in conformance with the requirements in ASTM C 109, cured at least 14 days, and then pulverized so that 100% passes the No. 50 sieve.

- 2.2. In addition to the admixtures listed on the Department's current list of approved admixtures, citric acid or borax may be used if requested in writing by the cement manufacturer and a sample is submitted to the Engineer. Chemical admixtures, if used, shall be included when testing for requirements listed in the table above.

Supplementary cementitious materials will not be required in approach slabs constructed using RSC.

RSC for approach slabs shall be prequalified before placement in conformance with the provisions for prequalification of concrete specified by compressive strength in Section 90-9.01, "General," of the Standard Specifications and the following:

1. Immediately after fabrication of the 5 test cylinders, the cylinders shall be stored in a temperature medium of 21 ± 1.5 °C until the cylinders are tested.
2. The Contractor shall determine the age of break to achieve an average strength of the 5 test cylinders of not less than 8.3 MPa. Not more than 2 test cylinders shall have a strength of less than 7.9 MPa. This age of break plus one hour will be the opening age.

Penetration requirements of Section 90-6.06, "Amount of Water and Penetration," of the Standard Specifications do not apply.

Steel angles, plates, and bars at the concrete barrier joints shall conform to the provisions in Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications.

Hardboard and expanded polystyrene shall conform to the provisions in Section 51-1.12D, "Sheet Packing, Preformed Pads, and Board Fillers," of the Standard Specifications.

## **TRIAL SLAB**

Before beginning work on approach slabs constructed using RSC, the Contractor shall successfully complete one or more trial slabs for each concrete mix design to be used in constructing the approach slabs. Trial slabs shall be constructed, finished, cured, and tested with the materials, tools, equipment, personnel, and methods to be used in completing the approach slabs. Trial slabs shall demonstrate that the Contractor is capable of producing approach slabs in conformance with the provisions in this section, within anticipated time periods including delivery, placement, finishing, and curing times, and under similar atmospheric and temperature conditions expected during construction operations. Multiple trial slabs for each approach slab concrete mix design may be required to envelop variable atmospheric conditions.

The minimum trial slab dimensions shall be 3 m x 6 m x 255 mm. Trial slabs shall be placed near the job site at a location mutually acceptable to the Engineer and the Contractor except slabs shall not be placed on the roadway or within the project limits.

Trial slab concrete shall develop compressive strengths of at least 8.3 MPa at the age of break used for prequalification of the concrete, and at least 17.2 MPa after 3 days when tested by the Contractor in conformance with the provisions in Section 90-9, "Compressive Strength," of the Standard Specifications.

Materials resulting from construction of trial slabs and test specimens shall become the property of the Contractor and shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

At least 15 days before use in the trial slab, the Contractor shall submit mix designs for approach slab concrete that include the following:

1. Compressive strength test results at the age of break for prequalification of the concrete, and at 3 days, 7 days, and 28 days
2. Proposed aggregate grading
3. Mix proportions of cementitious material, aggregate, and water
4. Types and amounts of chemical admixtures, if used
5. Initial and final set time of a 300 mm x 300 mm x 140 mm concrete block curing at  $21 \pm 5$  °C ambient temperature
6. Range of ambient temperatures over which the mix design will achieve the required minimum compressive strengths
7. Source of materials

## **REINFORCED CONCRETE CONSTRUCTION**

At the option of the Contractor, RSC may be proportioned and placed by volumetric continuous mixers.

### **Weighmaster Certificates**

Weighmaster certificates for RSC for approach slabs, regardless of the proportioning method used, shall include all information necessary to trace the manufacturer and manufacturer's lot number for the cement being used. When proportioned into fabric containers, the weighmaster certificates for the cement shall contain date of proportioning, location of proportioning, and actual net draft mass of the cement. When proportioned at the pour site from a storage silo, the weighmaster certificates shall contain date of proportioning, location of proportioning, and the net draft mass of the cement used in the load.

### **Volumetric Proportioning**

When RSC for approach slabs is proportioned by volume, the method shall conform to requirements specified herein.

Liquid admixtures shall be proportioned in conformance with the provisions in Section 90-4.10, "Proportioning and Dispensing Liquid Admixtures," of the Standard Specifications, except that liquid admixtures shall be proportioned by a meter.

Supplementary cementitious materials shall be protected from exposure to moisture until used. Adequate facilities shall be provided to assure that supplementary cementitious materials meeting the specified requirements are kept separate from other supplementary cementitious materials in order to prevent any but the specified supplementary cementitious materials from entering the work. Safe and suitable facilities for sampling supplementary cementitious materials shall be provided at the batch-mixer storage hopper or in the feed line.

Batch-mixer trucks shall be equipped to proportion cement, water, aggregate, and additives by volume. Aggregate feeders shall be connected directly to the drive on the cement vane feeder. The cement feed rate shall be

tied directly to the feed rate for the aggregate and other ingredients. Any change in the ratio of cement to aggregate shall be accomplished by changing the gate opening for the aggregate feed. The drive shaft of the aggregate feeder shall be equipped with a revolution counter reading to the nearest full or partial revolution of the aggregate delivery belt.

Aggregate shall be proportioned using a belt feeder operated with an adjustable cutoff gate delineated to the nearest quarter increment. Height of the gate opening shall be readily determinable. Cement shall be proportioned by a method that conforms to the accuracy requirements of these special provisions.

Delivery rate of aggregate and cement per revolution of the aggregate feeder shall be calibrated at appropriate gate settings for each batch-mixer truck used on the project and for each aggregate source. Batch-mixer trucks shall be calibrated at 3 different aggregate gate settings that are commensurate with production needs. Two or more calibration runs are required at each of the different aggregate gate openings. The actual mass of material delivered for aggregate proportioning device calibrations shall be determined by a platform scale as specified in these special provisions.

Aggregate belt feeder shall deliver aggregate to the mixer with volumetric consistency so that deviation for any individual aggregate delivery rate check-run does not exceed 1.0 percent of the mathematical average of all runs for the same gate opening and aggregate type. Each test run shall be at least 500 kg. Fine aggregate used for calibration shall not be reused for device calibration.

At the time of batching, aggregates shall be dried or drained sufficiently to result in stable moisture content, so that no visible separation of water from aggregate takes place during the proportioning process. In no event shall the free moisture content of the fine aggregate at the time of batching exceed 8 percent of its saturated, surface-dry weight.

If separate supplies of aggregate material of the same size group with different moisture content or specific gravity or surface characteristics affecting workability are available at the proportioning plant, withdrawals shall be made from one supply exclusively and the materials therein completely exhausted before starting another supply.

Rotating and reciprocating equipment on batch-mixer trucks shall be covered with metal guards.

The cement proportioning system shall deliver cement to the mixer with a volumetric consistency so that the deviation for any individual delivery rate check-run does not exceed 1.0 percent of the mathematical average of 3 runs of at least 500 kg each. Cement used for calibration shall not be reused for device calibration.

Water meter accuracy shall be such that, when operating between 50 percent and 100 percent of production capacity, the difference between the indicated mass of water delivered and the actual mass delivered does not exceed 1.5 percent of the actual mass for each of 2 individual runs of 285 liters. The water meter shall be equipped with a resettable totalizer and display the operating rate.

Calibration tests for aggregate, cement, and water proportioning devices shall be conducted with a platform scale located at the calibration site. Weighing of test run calibration material shall be performed on a platform scale having a maximum capacity not exceeding 2.5 tonnes with maximum graduations of 0.5 kg. The platform scale shall be error tested within 8 hours of calibration of batch-mixer truck proportioning devices. Error testing shall be performed with test masses conforming to California Test 109 and shall produce a witness scale that is within 2 graduations of the test mass load. The scale shall be available for use at the production site throughout the production period. Equipment needed for the calibration of proportioning systems shall remain available at the production site throughout the production period. A Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished with each delivery of aggregate, cement, and admixtures used for calibration tests and shall be submitted to the Engineer with certified copies of the mass of each delivery. The Certificate of Compliance shall state that the source of materials used for the calibration tests is from the same source as to be used for the planned work. The Certificate of Compliance shall be signed by an authorized representative who shall have the authority to represent and act for the Contractor.

The batch-mixer truck shall be equipped so that an accuracy check can be made before the first operation for the project and at any other time directed by the Engineer. Further calibration of proportioning devices shall be required every 90 days after production begins or when the source or type of any ingredient is changed. A spot calibration shall consist of calibration of the cement proportioning system only. A 2-run spot re-calibration of the cement proportioning system shall be performed each time 50 tonnes of cement has passed through the batch-mixer truck. Should the spot recalibration of the cement proportioning system fall outside the limitations specified herein, a full calibration of the cement proportioning system shall be completed before the resumption of production.

Cement storage shall be located immediately before the cement feeder and shall be equipped with a device that will automatically shut down the power to the cement feeder and aggregate belt feeder when the cement storage level is lowered to a point where less than 20 percent of the total volume is left in storage.

The Contractor shall furnish aggregate moisture determinations made in conformance with the requirements of California Test 223 at least every 2 hours during proportioning and mixing operations. Moisture determinations shall be recorded and presented to the Engineer at the end of the production shift.

Each aggregate bin shall be equipped with a device that will automatically shut down the power to the cement feeder and the aggregate belt feeder when the aggregate discharge rate is less than 95 percent of the scheduled discharge rate of any bin.

Indicators specified herein shall be in working order before commencing proportioning and mixing operations and shall be visible when standing near the batch-mixer truck.

Identifying numbers of batch-mixer trucks shall be at least 75 mm in height and be located on the front and rear of the vehicles.

Volumetric proportioned RSC for approach slabs shall be mixed in a mechanically operated mixer of adequate size and power for the type of RSC to be placed. Mixers may be of the auger type and shall be operated uniformly at the mixing speed recommended by the manufacturer. Mixers that have an accumulation of hard concrete or mortar shall be removed from service until cleaned. Other types of mixers may be used provided mixing quality will meet the requirements of these special provisions.

Charge or rate of feed to the mixer shall not exceed that that will permit complete mixing of the materials. Dead areas in the mixer, where material does not move or is not sufficiently agitated, shall be corrected by a reduction in the volume of material or by other adjustments. The mixer shall be designed to provide sufficient mixing action and movement to produce properly mixed RSC. Mixing shall continue until a homogeneous mixture is produced at discharge from the mixer. There shall be no lumps or evidence of non-dispersed cement at discharge from the mixer. No water shall be added to the RSC after discharge from the mixer.

Equipment having components made of aluminum or magnesium alloys that may have contact with plastic concrete during mixing or transporting of RSC shall not be used.

Uniformity of concrete mixtures will be determined by differences in penetration measurement made in conformance with the requirements in California Test 533. Difference in penetration, determined by comparing penetration tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed 15 mm. The Contractor shall furnish samples of freshly mixed concrete and provide facilities for obtaining the samples. Sampling facilities shall be safe, accessible, and clean, and shall produce a sample that is representative of production. Sample devices and sampling methods shall also conform to the requirements of California Test 125.

Ice shall not be used to cool RSC directly. When ice is used to cool water used in the mix, all of the ice shall be melted before entering the mixer.

Cement shall be proportioned and charged into the mixer by means that will result in no losses of cement due to wind or accumulation on equipment, or other conditions that will vary the required quantity of cement.

Each mixer shall have a prominently attached metal plate or plates on which the following information is provided:

1. Uses for which the equipment is designed
2. Manufacturer's guaranteed capacity of the mixer in terms of the volume of mixed concrete
3. Speed of rotation of the mixer

Consistency and workability of mixed concrete when discharged at the delivery point shall be suitable for placement and consolidation.

Information generated by volumetric devices will not be used for payment calculations.

The device that controls the proportioning of cement, aggregate, and water shall produce a log of production data. The log of production data shall consist of a series of snapshots captured at 15-minute intervals throughout the period of daily production. Each snapshot of production data shall be a register of production activity at that time and not a summation of the data over the preceding 15 minutes. The amount of material represented by each snapshot shall be the amount produced from 7.5 minutes before to 7.5 minutes after the capture time. The daily log shall be submitted to the Engineer in electronic or printed media at the end of each production shift or when requested by the Engineer and shall include the following:

1. Mass of cement per revolution count
2. Mass of each aggregate size per revolution count
3. Gate openings for each aggregate size being used
4. Mass of water added to the concrete per revolution count
5. Moisture content of each aggregate size being used
6. Individual volume of all other admixtures per revolution count

7. Time of day
8. Day of week
9. Production start and stop times
10. Batch-mixer truck identification
11. Name of supplier
12. Specific type, size, or designation of concrete being produced
13. Source of the individual aggregate sizes being used
14. Source, brand, and type of cement being used
15. Source, brand, and type of individual admixtures being used
16. Name and signature of operator

Required report items may be input by hand into a pre-printed form or captured and printed by the proportioning device. Electronic media containing recorded production data shall be presented in a tab-delimited format on a CD or a 90 mm diskette with a capacity of at least 1.4 megabytes. Each snapshot of the continuous production shall be followed by a line-feed carriage return with allowances for sufficient fields to satisfy the amount of data required by these specifications. The reported data shall be in the above order and shall include data titles at least once per report.

### **Construction**

Bar reinforcement in drilled holes shall be bonded in conformance with the provisions for drilling and bonding dowels in Section 83-2.02D(1), "General," of the Standard Specifications.

If reinforcement is encountered during drilling before the specified depth is attained, the Engineer shall be notified. Unless the Engineer approves coring through the reinforcement, the hole will be rejected and a new hole shall be drilled adjacent to the rejected hole to the depth shown on the plans.

The top surface of approach slabs shall be finished in conformance with the provisions for decks in Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications. The finished top surface shall not vary more than 6 mm from the lower edge of a 3.6 m straightedge placed parallel with the centerline. Edges of slabs shall be edger finished. The provisions for deck crack treatment do not apply to Type R approach slabs.

The surface of the approach slab will not be profiled, and the Profile Index requirements do not apply.

Approach slab concrete shall be cured before the time the lane is to be opened to public traffic as specified in "Maintaining Traffic" of these special provisions. The curing time shall be the opening age as determined during the prequalification of the concrete.

The approach slab may be opened to traffic at the age of break as determined during the prequalification of the concrete if successful compressive strength tests are performed in the field showing the slab has achieved 8.3 MPa. The compressive strength tests shall be performed by the Contractor in conformance with the provisions for sampling and testing cylinders in Section 90-9.01, "General," of the Standard Specifications. The decision to use this option shall be made in writing to the Engineer before beginning construction on the approach slab.

Approach slabs shall be cured with pigmented curing compound (1) in conformance with the provisions for curing structures in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications. The minimum curing period as specified herein shall be considered to begin at the start of discharge of the last truckload of concrete to be used in the slab. Fogging of the surface with water after the curing compound has been applied will not be required. Should the film of curing compound be damaged from any cause before the approach slab is opened to public traffic, the damaged portion shall be repaired immediately with additional compound, at the Contractor's expense. Damage to the curing compound after the approach slab is opened to public traffic shall not be repaired.

If the Contractor chooses the option of constructing approach slabs using RSC made with a proprietary cement, the curing method shall be as recommended by the manufacturer of the cement and as approved by the Engineer.

If the ambient temperature is below 18 °C during the curing period, an insulating layer or blanket shall cover the surface. The insulation layer or blanket shall have an R-value rating given in the table below. A heating tent may be used in lieu of or in combination with the insulating layer or blanket:

### R-Value Ratings

Temperature Range During Curing Period	R value, minimum
13 °C to 18 °C	1
7 °C to 13 °C	2
4 °C to 7 °C	3

Tests to determine the coefficient of friction of the final textured surface will be made only if the Engineer determines by visual inspection that the final texturing may not have produced a surface having the specified coefficient of friction. Tests to determine the coefficient of friction will be made after the approach slab is opened to public traffic, but not later than 5 days after concrete placement.

#### MEASUREMENT AND PAYMENT

Structural concrete, approach slab (Type R) will be measured and paid for in conformance with the provisions in Section 51-1.22, "Measurement," and Section 51-1.23, "Payment," of the Standard Specifications and these special provisions.

Full compensation for removing and disposing of portions of existing structures and pavement materials shall be considered as included in the contract price paid per cubic meter for structural concrete, approach slab (Type R), and no separate payment will be made therefor.

Full compensation for furnishing, stockpiling, and disposing of standby material for construction of temporary structural sections; and for constructing, maintaining, removing, and disposing of temporary structural sections shall be considered as included in the contract price paid per cubic meter for structural concrete, approach slab (Type R), and no separate payment will be made therefor.

Full compensation for drilling and bonding of bar reinforcement shall be considered as included in the contract price paid per cubic meter for structural concrete, approach slab (Type R), and no separate payment will be made therefor.

Full compensation for constructing, testing, and removing trial slabs shall be considered as included in the contract price paid per cubic meter for structural concrete, approach slab (Type R), and no separate payment will be made therefor.

#### 10-1.53 DRILL AND BOND DOWELS

Drilling and bonding dowels shall conform to the details shown on the plans, the provisions in Section 83-2.02D(1), "General," of the Standard Specifications, and these special provisions.

Dowels shall conform to the provisions for bar reinforcement in "Reinforcement" of these special provisions.

If reinforcement is encountered during drilling before the specified depth is attained, the Engineer shall be notified. Unless the Engineer approves coring through the reinforcement, the hole will be rejected and a new hole, in which reinforcement is not encountered, shall be drilled adjacent to the rejected hole to the depth shown on the plans.

Unless otherwise provided, dowels to be bonded into drilled holes will be paid for as bar reinforcing steel (bridge).

Unless otherwise provided, drilling and bonding dowels will be measured and paid for by the meter determined by the number and the required depth of holes as shown on the plans or as ordered by the Engineer.

The contract price paid per meter for drill and bond dowel shall include full compensation for furnishing all labor, materials (except reinforcing steel dowels), tools, equipment, and incidentals, and for doing all the work involved in drilling the holes, including coring through reinforcement when approved by the Engineer, and bonding the dowels, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### 10-1.54 CORE CONCRETE

Coring concrete shall consist of coring holes through reinforced concrete bridge members as shown on the plans and in conformance with these special provisions.

For cored holes greater than 3000 mm in length, the following shall apply:



- A. Prior to coring, the Contractor shall submit, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, the methods and equipment to be used in the coring operations.
- B. The deviation in alignment of cored holes from that shown on the plans shall not be more than 13 mm per 3000 mm of cored hole length with a maximum deviation of not more than 75 mm.
- C. Immediately after coring, the concrete cores shall be identified by the Contractor with a description of the core locations and submitted to the Engineer for inspection. When reinforcement is cut, coring operations shall be terminated, and the Contractor shall submit to the Engineer for approval, the procedure proposed to repair the cut reinforcement and to prevent further cutting of reinforcement.

The holes shall be cored by methods that will not shatter or damage the concrete adjacent to the holes.

Water for core drilling operations shall be from the local domestic water supply or shall not contain more than 1000 parts per million of chlorides as Cl, nor more than 1300 parts per million of sulfates as SO<sub>4</sub>, nor shall the water contain any impurities in a sufficient amount that would cause discoloration of the concrete or produce etching of the surface.

Water from core drilling operations shall not be permitted to fall on public traffic, to flow across shoulders or lanes occupied by public traffic, or to flow into gutters or other drainage facilities.

Coring concrete will be measured by the meter as core concrete of the sizes listed in the Engineer's Estimate. The cored concrete will be measured along the centerline of the hole without deduction for expansion joints.

The contract price paid per meter for core concrete of the sizes listed in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in coring the holes, including control of water from core drilling and repairing any damaged reinforcement, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

#### **10-1.55 REPLACE BEARING**

The work shall consist of temporarily supporting the structure, removing and disposing of rocker bearings and assemblies, retrofitting the existing concrete pier caps, and installing elastomeric bearing pads in accordance with the details shown on the plans and the requirements in these special provisions.

Permit vehicles shall not be allowed on the structure at any time during the bearing replacement operation. At least 2 weeks before starting the work, the Contractor shall notify the Caltrans District 3 Encroachment Permit Engineer at:

CALTRANS DISTRICT 3  
PERMIT ENGINEER  
703 B Street  
P.O. Box 911  
Marysville, CA 95901  
(530) 741-4403

Attention is directed to "Order of Work" and "Maintaining Traffic" elsewhere in these special provisions regarding construction sequences.

Attention is directed to "Concrete Structures", "Steel Structures", "Drill and Bond Dowel", and "Reinforcement" elsewhere in these special provisions for specifications on construction of abutment and pier bearing seat areas. Attention is directed to the notes on the plans regarding seismic retrofit construction sequences.

#### **GENERAL**

The Contractor shall be responsible for the methods and equipment used to raise and support the existing structure for replacement of bearings. The Contractor shall be responsible for the design of the temporary supports and temporary lateral bracing system.

Temporary supports and jacking assemblies shall not be founded in the stream bed of Weber Creek. Temporary supports shall be anchored to the column or pier cap at each bent.

Jacking assemblies and temporary supports including temporary lateral bracing shall be designed and constructed in conformance with the requirements of Section 51-1.06, "Falsework," of the Standard Specifications and these special provisions and shall accommodate the loads shown on the plans and any additional loads due to the Contractor's operations. The grade of the superstructure shall be restored to its original elevation.

At least 30 working days before starting the work the Contractor shall submit to the Engineer complete details and working drawings of the methods and equipment he proposes to use for replacement of bearings including construction, installation, and removal methods and sequences to obtain full bearing of the new elastomeric bearing pads, in accordance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. Approval by the Engineer of the temporary support working drawings prior to start of jacking operations or temporary support inspection performed by the Engineer will in no way relieve the Contractor of full responsibility for the temporary supports.

The maximum loading and deflections used on jacks, brackets, columns and other manufactured devices shall not exceed the manufacturer's recommendations. The Contractor shall furnish engineering data from the manufacturer verifying the manufacturer's recommendations or shall perform tests as necessary to demonstrate the adequacy of any such device proposed for use. Adequate means shall be employed to prevent unplanned lateral and longitudinal movement of the superstructure. The falsework, jacks, and the superstructure shall be stable, under all loadings including traffic, during all phases of the operation.

Manufactured assemblies shall conform to the provisions in Section 51-1.06A(2) of the Standard Specifications and these special provisions.

Each jack shall be equipped with either a pressure gage or load cell for determining the jacking force. Pressure gages shall have an accurately reading dial at least 150 mm in diameter. Each jack shall be calibrated by a private laboratory approved by the Transportation Laboratory within 6 months prior to use and after each repair, unless otherwise directed. Each jack and its gage shall be calibrated as a unit with the cylinder extension in the approximate position that it will be at final jacking force and shall be accompanied by a certified calibration chart. Load cells shall be calibrated and provided with an indicator by which the jacking force is determined.

A redundant system of supports shall be provided during the entire jacking operation for backup should any of the jacks fail. The redundant system shall include stacks of steel plates added as necessary to maintain redundant supports at each location within 6 mm of the jacking sill or corbels.

Prior to proceeding with bearing removal, an engineer for the Contractor who is registered as a Civil Engineer in the State of California shall inspect the temporary supports, including jacking and displacement monitoring systems, for conformity to the working drawings. The Contractor's registered engineer shall certify in writing that the temporary supports, including jacking and displacement monitoring systems, substantially conform to the working drawings and that the material and workmanship are satisfactory for the purpose intended. A copy of this certification shall be available at the work site at all times.

Prior to proceeding with bearing removal, a meeting between the Contractor, the County, Caltrans, and other agencies as required, shall be held to discuss the bearing removal work.

The Contractor's registered engineer shall be present at the bridge site at all times when jacking operations or adjustments are in progress and when bearing removal and installation operations are in progress. The Contractor's registered engineer shall inspect the jacking, removal, and installation operations and shall report in writing on a daily basis of the progress of the operations and the status of the remaining structure. A copy of the daily report shall be available at the work site at all times. Should an unplanned event occur, the Contractor's registered engineer shall submit immediately to the Engineer for approval, the procedure or proposed operation to correct or remedy the occurrence.

Temporary supports and jacking assemblies shall remain in place, as required to support the superstructure until the substructure or other supports, shown on the plans, have been completed and have attained the strength at transfer of the superstructure load. The concrete shall attain a compressive strength of 20 MPa.

Displacement monitoring equipment shall be provided and maintained at locations as determine by the Engineer. Vertical and horizontal displacements of the existing structure shall be monitored continuously during jacking operations and shall be accurately measured and recorded at least twice daily during repair work.

Should unanticipated displacements, cracking, or other damage occur, the construction shall be discontinued until corrective measures satisfactory to the Engineer are performed.

Additions or modifications to the structure, in connection with jacking, and jacking assemblies shall be subject to approval of the Engineer.

The superstructure shall be jacked and adjusted to grade uniformly and in such a manner that that a roadway satisfactory for the use of public traffic is provided in conformance with the provisions of Section 7-1.08 "Public Convenience," of the Standard Specifications and these special provisions.

Jacking shall be performed from underneath the girders. All girders, at each abutment or on both sides of the pier cap, at each pier shall be supported and raised simultaneously.

Jacking operations shall be carried out in a uniform manner so that no distortion that would cause excessive stress or damage will be jacked into the superstructure. Jacking shall be limited to the minimum necessary to install

new bearing pads, in no case more than 5 mm higher than the final grade. Tell-tales shall be provided to monitor actual movement.

Removing the existing bearing assemblies and grout pads shall conform to the requirements in Section 15-4, "Bridge Removal," of the standard specifications and these special provisions.

Elastomeric bearing pads shall conform to the provisions in Section 51-1.12H, "Elastomeric Bearing Pads," of the Standard Specifications and these special provisions. Releasing of the superstructure onto the new bearing pads must occur while the ambient air temperature is between 5°C and 26°C.

Damage to the structure as a result of the Contractor's operations shall be repaired or replaced in accordance with the requirements for new work of similar character by the Contractor at his expense.

When replacement operations have been completed, all temporary falsework, supports, cribbing, blocking and jacking assemblies shall be removed. All rocker bearings and assemblies shall become property of the Contractor and disposed of in conformance with the requirements in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

#### **MEASUREMENT**

Replacing the bearings will be measured by the unit determined by the actual count of bearings installed.

#### **PAYMENT**

The contract unit price paid for replace bearing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in developing details and working drawings, raising and lowering and temporarily supporting the structure, removal and disposal of existing rocker bearings and assemblies, installing elastomeric bearing pads, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.56 SEALING JOINTS**

Joints in concrete bridge decks and joints between concrete structures and concrete approach slabs must be sealed in conformance with the details shown on the plans, the provisions in Section 51, "Concrete Structures," of the Standard Specifications, and these special provisions.

When ordered by the Engineer, a joint seal larger than called for by the Movement Rating shown on the plans must be furnished and installed. Payment to the Contractor for furnishing the larger seal and for saw cutting the increment of additional depth of groove required will be determined as provided in Section 4-1.03, "Changes," of the Standard Specifications.

#### **10-1.57 POLYESTER CONCRETE OVERLAY**

This work shall include furnishing, testing, and application of methacrylate resin prime coat and polyester concrete overlay as shown on the plans and as specified in these special provisions.

Before starting deck overlay work, the Contractor shall submit plans in conformance with Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications and these special provisions for the following:

- A. Public safety plan for the use of methacrylate resin and polyester concrete
- B. Placement plan for the construction operation

The plans shall identify materials, equipment, and methods to be used.

The public safety plan for the use of methacrylate resin and polyester concrete shall include details for the following:

- A. Shipping
- B. Storage
- C. Handling
- D. Disposal of residual methacrylate resin, polyester concrete, and the containers

The placement plan for construction shall include the following:

- A. Schedule of overlay work for each bridge. The schedule shall be consistent with "Maintaining Traffic" of these special provisions and shall include time for the Engineer to perform California Test 342.
- B. Methods and materials to be used, including the following:

1. Description of equipment for applying the methacrylate resin
2. Description of equipment for measuring, mixing, placing., and finishing the polyester concrete overlay
3. Cure time for the polyester concrete
4. Description of equipment for applying the sand

If the measures proposed in the safety plan are inadequate to provide for public safety associated with the use of methacrylate resin and polyester concrete, the Engineer will reject the plan and direct the Contractor to revise the plan. Directions for revisions will be in writing and include detailed comments. The Engineer will notify the Contractor of the approval or rejection of a submitted or revised plan within 15 days of receipt of that plan.

In the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

For projects where new portland cement concrete decks are cast-in-place, those new cast-in-place portland cement concrete decks shall conform to the provisions in Section 51-1.17, "Finish Bridge Decks," of the Standard Specifications before polyester deck overlay work is started.

For concrete decks that are existing before the start of the project, the smoothness of existing decks that are to be covered with polyester concrete overlay will be tested by the Engineer with a bridge profilograph. Changing the smoothness of these existing bridge decks will be as directed by the Engineer and will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

Before beginning polyester deck overlay work, the cast-in-place portland cement concrete deck surface shall be prepared as specified in "Prepare Concrete Bridge Deck Surface," "Remove Unsound Concrete," and "Rapid Setting Concrete Patches" of these special provisions.

Completed polyester concrete deck overlay shall conform to the provisions in Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications.

## MATERIALS

Before using methacrylate resin and polyester concrete, a Material Safety Data Sheet shall be submitted for each shipment of methacrylate and polyester resins.

Before placing polyester concrete, the deck shall receive a methacrylate resin prime coat. Methacrylate resin shall be low odor, wax free, and have a high molecular weight. Before adding initiator, the resin shall have a maximum volatile content of 30 percent when tested in conformance with the requirements in ASTM Designation: D 2369, and shall conform to the following:

METHACRYLATE RESIN PRIME COAT		
PROPERTY	REQUIREMENT	TEST METHOD
* Viscosity	0.025 Pa s , maximum, (Brookfield RVT with UL adaptor, 50 RPM at 25°C)	ASTM D 2196
* Specific Gravity	0.90 minimum, at 25°C	ASTM D 1475
* Flash Point	82°C, minimum	ASTM D 3278
* Vapor Pressure	1.0 mm Hg, maximum, at 25°C	ASTM D 323
PCC Saturated Surface-Dry Bond Strength	3.5 MPa, minimum at 24 hours and 21±1°C	California Test 551
* Test shall be performed before adding initiator.		

Polyester concrete shall consist of polyester resin binder and dry aggregate. The resin shall be an unsaturated isophthalic polyester-styrene co-polymer conforming to the following:

POLYESTER RESIN BINDER		
PROPERTY	REQUIREMENT	TEST METHOD
* Viscosity	0.075 to 0.200 Pa s (RVT, No. 1 Spindle, 20 RPM at 25°C	ASTM D 2196
* Specific Gravity	0.075 to 0.200 Pa s (RVT, No. 1 Spindle, 20 RPM at 25°C	ASTM D 1475
Elongation	35 percent, minimum Type I at 11.5 mm/min. Thickness = 6.5 ± 1 mm	ASTM D 638
	Sample Conditioning: 18/25/50 + 5/70	ASTM D 618
Tensile Strength	17.5 MPa, minimum Type I at 11.5 mm/min. Thickness = 6.5 ± 1 mm	ASTM D 638
	Sample Conditioning: 18/25/50 + 5/70	ASTM D 618
* Styrene Content	40 percent to 50 percent by mass	ASTM D 2369
Silane Coupler	1.0 percent, minimum (by mass of polyester styrene resin)	
PCC Saturated Surface-Dry Bond Strength	3.5 MPa, minimum at 24 hours and 21 ± 1°C	California Test 551
* Static Volatile Emission	60 gram per square meter, loss, maximum	South Coast Air Quality Management District, Standard Method
* Test shall be performed before adding initiator.		

The silane coupler shall be an organosilane ester, gammamethacryloxypropyltrimethoxysilane. The promoter shall be compatible with suitable methyl ethyl ketone peroxide and cumene hydroperoxide initiators.

Aggregate for polyester concrete shall conform to the provisions in Section 90-2.02, "Aggregates," of the Standard Specifications and either of the following combined aggregate gradings:

COMBINED AGGREGATE		
Sieve Size	Percentage Passing	
	9.5 mm Max.	4.75 mm Max.
12.5 mm	100	100
9.5 mm	83 - 100	100
4.75 mm	65 - 82	62 - 85
2.36 mm	45 - 64	45 - 67
1.18 mm	27 - 48	29 - 50
600 µm	12 - 30	16 - 36
300 µm	6 - 17	5 - 20
150 µm	0 - 7	0 - 7
75 µm	0 - 3	0 - 3

Aggregate retained on the 2.36 mm sieve shall have a maximum of 45 percent crushed particles when tested in conformance with California Test 205. Fine aggregate shall consist of natural sand.

The polyester resin binder in the concrete shall be approximately 12 percent by weight of the dry aggregate; the exact percentage will be determined by the Engineer.

The average of coarse and fine aggregate absorption shall not exceed one percent as determined by California Tests 206 and 207.

At the time of mixing with the resin, the moisture content of the aggregate, as determined by California Test 226, shall not exceed one half of the aggregate absorption.

### TESTING

The Contractor shall allow 20 days for sampling and testing by the Engineer of the methacrylate and polyester resins before proposed use. If bulk resin is to be used, the Contractor shall notify the Engineer in writing at least 15 days before the delivery of the bulk resin to the job site. Bulk resin is any resin stored in containers in excess of 209 liters.

Before constructing the overlay, one or more trial overlays shall be placed on a previously constructed concrete base to determine the initial set time and to demonstrate the effectiveness of the methacrylate resin primecoat and also the polyester concrete mixing, placing, and finishing equipment. Each trial overlay shall be at least 3.6 m wide, at least 1.8 m long, and the same thickness as the overlay to be constructed. The trial overlay areas shall be within the project limits and at a location approved by the Engineer. Weather and pavement conditions during the test work shall be similar to those expected on the deck for production work. Equipment used for testing shall be similar to those used for deck overlay production work.

All materials used in the trial overlays, including the concrete base, shall become the property of the Contractor and shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Right of Way," of the Standard Specifications.

### CONSTRUCTION

Equipment shall be fitted with suitable traps, filters, drip pans, or other devices as necessary to prevent oil or other deleterious material from being deposited on the deck.

When magnesium phosphate concrete is placed before the deck overlay, the prime coat shall not be placed on this concrete until at least 72 hours after final set.

When modified high alumina based concrete is placed before the deck overlay, the prime coat shall not be placed on this concrete until at least 30 minutes after final set.

Expansion joints shall be adequately isolated before overlaying or may be sawed within 4 hours after overlay placement, as approved by the Engineer. The exact time of sawing will be determined by the Engineer. Before applying the methacrylate resin prime coat, the area to receive the prime coat shall be dry and blown clean by compressed air to remove accumulated dust and any other loose material. The prepared surface temperature shall be at least 10°C and not more than 38°C, and the relative humidity less than 85 percent when the prime coat is applied.

The prime coat shall be uniformly applied to completely cover the surface to receive the polyester concrete. The rate of spread shall be approximately 1.5 square meters per liter.

Immediately after the prime coat has been applied, the polyester concrete overlay shall be placed.

Polyester concrete shall be mixed in mechanically operated mixers. The resin binder shall be initiated and thoroughly blended just before mixing with aggregate. The polyester concrete shall be mixed for a minimum of

2 minutes before placing. Mixer size shall be limited to a 0.25-cubic meter capacity, unless approved by the Engineer.

A continuous mixer, employing an auger screw/chute device, may be approved for use by the Engineer contingent on a demonstration that the device can consistently produce a satisfactory product. The continuous mixer shall (1) be equipped with a metering device that automatically measures and records the aggregate volumes and the corresponding resin volumes, and (2) have a readout gage, visible to the Engineer at all times, that displays the volumes being recorded. The volumes shall be recorded at no greater than 5 minute intervals along with the time and date of each recording. A printout of the recordings shall be furnished to the Engineer at the end of each workshift.

The amount of initiator used in polyester concrete shall be sufficient to produce an initial set time between 30 minutes and 120 minutes during placement. The initial set time will be determined by using an initial-setting time Gillmore needle in conformance with the requirements in ASTM Designation: C 266. Accelerators or inhibitors may be required to achieve proper set times and shall be used as recommended by the resin supplier.

Polyester concrete shall be placed before gelling and within 15 minutes following addition of initiator, whichever occurs first. Polyester concrete that is not placed within this time shall be discarded.

The finishing equipment shall be used to strike off the polyester concrete to the established grade and cross section. Finishing equipment shall be fitted with vibrators or other mechanisms capable of consolidating the polyester concrete to the required compaction.

The polyester concrete shall be consolidated to a relative compaction of not less than 97 percent in conformance with California Test 552.

Polyester concrete surfaces shall receive an abrasive sand finish. The sand shall be commercial quality blast sand conforming to the quality and dryness requirements for polyester concrete aggregate as specified in these special provisions. Ninety-five percent of the sand shall pass the 2.36-mm sieve, and 95 percent shall be retained on the 850- $\mu$ m sieve.

The sand finish shall be uniformly applied immediately after overlay strike-off and before gelling occurs to provide a minimum uniform coverage of 0.4 kilogram per square meter.

The surface texture of polyester concrete overlay surfaces shall be uniform and shall have a coefficient of friction of not less than 0.35 as measured by California Test 342. Portions of surfaces that do not meet the above provision shall be ground or grooved parallel to the centerline in conformance with the provisions of Section 42, "Groove and Grind Pavement," of the Standard Specifications until the above tolerance is met.

Traffic and equipment shall not be permitted on the overlay for a minimum of 4 hours following final finishing. Overlays shall be protected from moisture for a minimum of 4 hours after finishing.

The edges of the polyester concrete overlay shall be tapered when the overlay work is not completed within the allowable lane closure and the overlay is greater than 13 mm higher in elevation than the adjacent pavement. Edges that are transverse to the direction of traffic shall be tapered at a 1:20 (vertical:horizontal) slope, and edges that are longitudinal to the direction of traffic shall be tapered at a 1:4 (vertical:horizontal) slope. Tapers may remain and be overlaid with subsequent placement of polyester concrete overlay.

## **MEASUREMENT AND PAYMENT**

Furnishing polyester concrete overlay will be measured by the cubic meter. The volume to be paid for will be determined from calculations based on the quantity of resin binder used, the percent by weight of resin binder in the polyester concrete, and a unit weight of 2165 kg/m<sup>3</sup>. The Contractor shall furnish suitable measuring devices to assure correct proportioning of materials and accurate measurements for calculating payment quantities. The payment quantity shall be the calculated quantity of polyester concrete overlay used in the work, exclusive of material used in trial overlays and any wasted or unused material. When the plans show that unsound concrete patching material is polyester overlay, the payment quantity will include the patches.

Placing polyester concrete overlay will be measured by the square meter. The area to be paid for will be based on the dimensions shown on the plans.

The contract price paid per cubic meter for furnish polyester concrete overlay shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing polyester concrete, including furnishing methacrylate resin prime coat and furnishing materials for trial overlays, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per square meter for placing polyester concrete overlay shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in

constructing the polyester concrete overlay, complete in place, including application of prime coat, constructing and disposing of trial overlays and base, and notification of the public, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for execution of the public safety plan, but excluding the airborne emissions monitoring work done by the certified industrial hygienist and notification of the public, shall be considered as included in the contract prices paid for the items of work involving polyester concrete overlay, and no additional compensation will be allowed therefor.

For polyester concrete overlay, airborne emissions monitoring with reporting done by the certified industrial hygienist and notification of the public will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

#### **10-1.58 RAPID SETTING CONCRETE PATCHES**

This work shall consist of cleaning the surfaces and furnishing, placing, and finishing concrete patches. Concrete patches shall be placed in conformance with the details shown on the plans, the provisions of the Standard Specifications, and these special provisions.

The concrete material shall be a high-strength material consisting of either magnesium phosphate concrete, modified high alumina based concrete or portland cement based concrete. Magnesium phosphate concrete shall conform to the requirements for magnesium phosphate concrete in Section 83-2.02D(1), "General," of the Standard Specifications and these special provisions. Modified high alumina based concrete and portland cement based concrete shall be water activated and shall conform to the requirements for single component (water activated) magnesium phosphate concrete in Section 83-2.02D(1), "General," of the Standard Specifications and these special provisions.

A clean uniform rounded aggregate filler may be used to extend the concrete. The moisture content of the aggregate shall not exceed 0.5 percent. Grading of the aggregate shall conform to the following:

Sieve Size	Percentage Passing
12.5 mm	100
1.18 mm	0-5

The amount of aggregate filler shall conform to the manufacturer's recommendations, but in no case shall the concrete strengths be less than that specified for magnesium phosphate concrete in Section 83-2.02D(1), "General," of the Standard Specifications.

Mixing of components of dual component (with a prepackaged liquid activator) magnesium phosphate shall be by complete units, supplied by the manufacturer. Portions of units shall not be used. Water shall not be added to dual component magnesium phosphate.

Cleaning the contact surfaces of existing concrete shall be accomplished by abrasive blast cleaning the concrete and exposed reinforcing steel, as necessary, to remove all rust, paint, grease, asphalt or other foreign materials. A minimum of 3 mm of concrete shall be removed. Immediately prior to applying the new concrete, the surfaces shall be recleaned by sweeping and pressure jetting, or by other approved means, as necessary to remove debris which has accumulated during construction or after abrasive blast cleaning. The surface temperature of the areas to be covered shall be 4°C or above when the concrete is applied. Methods proposed to heat said surfaces are subject to approval by the Engineer. The contact surface for the magnesium phosphate concrete shall be dry. The contact surfaces for modified high alumina based concrete or portland cement based concrete may be damp but not saturated.

Magnesium phosphate concrete shall not be mixed in containers or worked with tools containing zinc, cadmium, aluminum or copper. Modified high alumina based concrete shall not be mixed in containers or worked with tools containing aluminum.

Concrete shall not be retempered. Finishing tools that are cleaned with water shall be thoroughly dried before working the concrete.

When placing concrete on slopes exceeding 5 percent, the Engineer may require the Contractor to provide a flow controlled modified material.

Modified high alumina based concrete and portland cement based concrete shall be cured in conformance with the provisions in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications. Magnesium phosphate concrete shall not be cured.

Unless otherwise permitted in writing by the Engineer, public traffic shall not be permitted on the new concrete until at least one hour after final set.



Rapid setting concrete (patch) used for deck repair will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

**10-1.59 ARCHITECTURAL TREATMENT**

Architectural treatment for concrete surfaces shall conform to the details shown on the plans and the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

Architectural textures listed below are required at concrete surfaces shown on the plans:

A. Dry stack rock texture

The architectural texture shall be a texture simulating the appearance of a dry stack rock pattern matching the texture and colors of the architecturally finished bridge on State Route 50 in the City of Placerville at the intersection with Missouri Flat Road. Liners shall be full size of the panel as drawn without vertical or horizontal joints. The pattern shall follow a horizontal line and not follow the grade of the road. Corners at the intersection of plane surfaces shall be sharp and crisp without easing or rounding. A Class 1 surface finish shall be applied to the architectural texture.

Attention is directed to "Prepare and Paint Concrete Surfaces" of these special provisions.

**FORM LINERS**

Form liners shall be used for textured concrete surfaces and shall be installed in conformance with the manufacturer's recommendations, unless other methods of forming textured concrete surfaces are approved by the Engineer. Form liners shall be manufactured from an elastomeric material or a semi-elastomeric polyurethane material by a manufacturer of commercially available concrete form liners. No substitution of other types of formliner material will be allowed. Form liners shall leave crisp, sharp definition of the architectural surface. Recurring textural configurations exhibited by repeating, recognizable shadow patterns shall be prevented by proper casting of form liner patterns. Textured concrete surfaces with such recurring textural configurations shall be reworked to remove such patterns as approved by the Engineer or the concrete shall be replaced.

Form liners shall have the following properties:

Description	ASTM Designation:	Range
Elastomeric material		
Shore A hardness	D 2240	20 to 65
Tensile strength (MPa)	D 412	0.9 to 6.2
Semi-elastomeric polyurethane		
Shore D hardness	D 2240	55 to 65
Tensile strength (MPa)	D 2370	18 minimum

Cuts and tears in form liners shall be sealed and repaired in conformance with the manufacturer's recommendations. Form liners that are delaminated from the form shall not be used. Form liners with deformations to the manufactured surface caused by improper storage practices or any other reason shall not be used.

Form liners shall extend the full length of texturing with transverse joints at 2.5 m minimum spacing. Small pieces of form liners shall not be used. Grooves shall be aligned straight and true. Grooves shall match at joints between form liners. Joints in the direction of grooves in grooved patterns shall be located only in the depressed portion of the textured concrete. Adjoining liners shall be butted together without distortion, open cracks or offsets at the joints. Joints between liners shall be cleaned before each use to remove any mortar in the joint.

Adhesives shall be compatible with the form liner material and with concrete. Adhesives shall be approved by the liner manufacturer. Adhesives shall not cause swelling of the liner material.

### **RELEASING FORM LINERS**

Products and application procedures for form release agents shall be approved by the form liner manufacturer. Release agents shall not cause swelling of the liner material or delamination from the forms. Release agents shall not stain the concrete or react with the liner material. For reliefs simulating fractured concrete or wood grain surfaces the application method shall include the scrubbing method using a natural bristle scrub brush in the direction of grooves or grain. The release agent shall coat the liner with a thin film. Following application of form release agent, the liner surfaces shall be cleaned of excess amounts of agent using compressed air. Buildup of form release agent caused by the reuse of a liner shall be removed at least every 5 uses.

Form liners shall release without leaving particles or pieces of liner material on the concrete and without pulling or breaking concrete from the textured surface. The concrete surfaces exposed by removing forms shall be protected from damage.

### **CURING**

Concrete surfaces with architectural texture shall be cured only by the forms-in-place or water methods. Seals and curing compounds shall not be used.

### **MEASUREMENT AND PAYMENT**

Architectural treatment will be measured and paid for by the square meter.

The contract price paid per square meter for architectural treatment of the types listed in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in architectural treatment, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.60 REINFORCEMENT**

Reinforcement shall conform to the provisions in Section 52, "Reinforcement," of the Standard Specifications and these special provisions.

The Department's mechanical splices prequalified list can be found at the following internet site:

[http://www.dot.ca.gov/hq/esc/approved\\_products\\_list/](http://www.dot.ca.gov/hq/esc/approved_products_list/)

The provisions of "Welding Quality Control" of these special provisions shall not apply to resistance butt welding.

### **10-1.61 STEEL STRUCTURES**

Construction of steel structures shall conform to the provisions in Section 55, "Steel Structures," of the Standard Specifications and these special provisions. In addition to Section 55 of the Standard Specifications the Contractor shall prepare a steel structure erection plan signed by an engineer who is registered as a Civil Engineer in the State of California.

### **GENERAL**

Attention is directed to "Welding" in Section 8, "Materials," of these special provisions.

The following substitutions of high-strength steel fasteners shall be made:

METRIC SIZE SHOWN ON THE PLANS	SIZE TO BE SUBSTITUTED
ASTM Designation: A 325M (Nominal bolt diameter (mm))	ASTM Designation: A 325 (Nominal bolt diameter (inch))
13, 12.70, or M12	1/2
16, 15.88, or M16	5/8
19, 19.05, or M20	3/4
22, 22.22, or M22	7/8
24, 25, 25.40, or M24	1
29, 28.58, or M27	1 1/8
32, 31.75, or M30	1 1/4
38, 38.10, or M36	1 1/2

High-strength fastener assemblies and other bolts attached to sign structures with nuts and washers shall be zinc-coated. When direct tension indicators are used in these assemblies, the direct tension indicator and all components of the fastener assembly shall be zinc-coated by the mechanical deposition process.

### ROTATIONAL CAPACITY TESTING PRIOR TO SHIPMENT TO JOB SITE

Rotational capacity tests shall be performed on all lots of high-strength fastener assemblies prior to shipment of these lots to the project site. Zinc-coated assemblies shall be tested after all fabrication, coating, and lubrication of components has been completed. One hardened washer shall be used under each nut for the tests.

The requirements of this section do not apply to high-strength cap screws or high-strength bolts used for slip base plates.

Each combination of bolt production lot, nut lot, and washer lot shall be tested as an assembly.

A rotational capacity lot number shall be assigned to each combination of lots tested. Each shipping unit of fastener assemblies shall be plainly marked with the rotational capacity lot number.

Two fastener assemblies from each rotational capacity lot shall be tested.

The following equipment, procedure, and acceptance criteria shall be used to perform rotational capacity tests on and determine acceptance of long bolts. Fasteners are considered to be long bolts when full nut thread engagement can be achieved when installed in a bolt tension measuring device:

#### A. Long Bolt Test Equipment:

1. Calibrated bolt tension measuring device with adequate tension capacity for the bolts being tested.
2. Calibrated dial or digital torque wrench. Other suitable tools will be required for performing Steps 7 and 8 of the Long Bolt Test Procedure. A torque multiplier may be required for large diameter bolts.
3. Spacer washers or bushings. When spacer washers or bushings are required, they shall have the same inside diameter and equal or larger outside diameter as the appropriate hardened washers conforming to the requirements in ASTM Designation: F436.
4. Steel beam or member, such as a girder flange or cross frame, to which the bolt tension measuring device will be attached. The device shall be accessible from the ground.

#### B Long Bolt Test Procedure:

1. Measure the bolt length. The bolt length is defined as the distance from the end of the threaded portion of the shank to the underside of the bolt head.
2. Install the nut on the bolt so that 3 to 5 full threads of the bolt are located between the bearing face of the nut and the underside of the bolt head. Measure and record the thread stickout of the bolt. Thread stickout is determined by measuring the distance from the outer face of the nut to the end of the threaded portion of the shank.
3. Insert the bolt into the bolt tension measuring device and install the required number of washers, and additional spacers as needed, directly beneath the nut to produce the thread stickout measured in Step 2 of this procedure.
4. Tighten the nut using a hand wrench to a snug-tight condition. The snug tension shall not be less than the Table A value but may exceed the Table A value by a maximum of 2 kips.

Table A

High-Strength Fastener Assembly Tension Values to Approximate Snug-Tight Condition	
Bolt Diameter (inches)	Snug Tension (kips)
1/2	1
5/8	2
3/4	3
7/8	4
1	5
1 1/8	6
1 1/4	7
1 3/8	9
1 1/2	10

5. Match-mark the assembly by placing a heavy reference start line on the face plate of the bolt tension measuring device which aligns with 1) a mark placed on one corner of the nut, and 2) a radial line placed across the flat on the end of the bolt, or on the exposed portions of the threads of tension control bolts. Place an additional mark on the outside of the socket that overlays the mark on the nut corner such that this mark will be visible while turning the nut. Make an additional mark on the face plate, either 2/3 of a turn, one turn, or 1 1/3 turn clockwise from the heavy reference start line, depending on the bolt length being tested as shown in Table B.

Table B

Required Nut Rotation for Rotational Capacity Tests <sup>(a,b)</sup>	
Bolt Length (measured in Step 1)	Required Rotation (turn)
4 bolt diameters or less	2/3
Greater than 4 bolt diameters but no more than 8 bolt diameters	1
Greater than 8 bolt diameters, but no more than 12 bolt diameters <sup>(c)</sup>	1 1/3
<p>(a) Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance shall be plus or minus 30 degrees; for bolts installed by 2/3 turn and more, the tolerance shall be plus or minus 45 degrees.</p> <p>(b) Applicable only to connections in which all material within grip of the bolt is steel.</p> <p>(c) When bolt length exceeds 12 diameters, the required rotation shall be determined by actual tests in a suitable tension device simulating the actual conditions.</p>	

6. Turn the nut to achieve the applicable minimum bolt tension value listed in Table C. After reaching this tension, record the moving torque, in foot-pounds, required to turn the nut, and also record the corresponding bolt tension value in pounds. Torque shall be measured with the nut in motion. Calculate the value, T (in ft-lbs), where  $T = [( \text{the measured tension in pounds} ) \times ( \text{the bolt diameter in inches} ) / 48 \text{ in/ft}]$ .

Table C

Minimum Tension Values for High-Strength Fastener Assemblies	
Bolt Diameter (inches)	Minimum Tension (kips)
1/2	12
5/8	19
3/4	28
7/8	39
1	51
1 1/8	56
1 1/4	71
1 3/8	85
1 1/2	103

7. Turn the nut further to increase bolt tension until the rotation listed in Table B is reached. The rotation is measured from the heavy reference line made on the face plate after the bolt was snug-tight. Record this bolt tension.
8. Loosen and remove the nut and examine the threads on both the nut and bolt.

C. Long Bolt Acceptance Criteria:

1. An assembly shall pass the following requirements to be acceptable: 1) the measured moving torque (Step 6) shall be less than or equal to the calculated value, T (Step 6), 2) the bolt tension measured in Step 7 shall be greater than or equal to the applicable turn test tension value listed in Table D, 3) the nut shall be able to be removed from the bolt without signs of thread stripping or galling after the required rotation in Step 7 has been achieved, 4) the bolt does not shear from torsion or fail during the test, and 5) the assembly does not seize before the final rotation in Step 7 is reached. Elongation of the bolt in the threaded region between the bearing face of the nut and the underside of the bolt head is expected and will not be considered a failure. Both fastener assemblies tested from one rotational capacity lot shall pass for the rotational capacity lot to be acceptable.

Table D

Turn Test Tension Values	
Bolt Diameter (inches)	Turn Test Tension (kips)
1/2	14
5/8	22
3/4	32
7/8	45
1	59
1 1/8	64
1 1/4	82
1 3/8	98
1 1/2	118

The following equipment, procedure, and acceptance criteria shall be used to perform rotational capacity tests on and determine acceptance of short bolts. Fasteners are considered to be short bolts when full nut thread engagement cannot be achieved when installed in a bolt tension measuring device:

A. Short Bolt Test Equipment:

1. Calibrated dial or digital torque wrench. Other suitable tools will be required for performing Steps 7 and 8 of the Short Bolt Test Procedure. A torque multiplier may be required for large diameter bolts.
2. Spud wrench or equivalent.

3. Spacer washers or bushings. When spacer washers or bushings are required, they shall have the same inside diameter and equal or larger outside diameter as the appropriate hardened washers conforming to the requirements in ASTM Designation: F436.
4. Steel plate or girder with a hole to install bolt. The hole size shall be 1.6 mm greater than the nominal diameter of the bolt to be tested. The grip length, including any plates, washers, and additional spacers as needed, shall provide the proper number of threads within the grip, as required in Step 2 of the Short Bolt Test Procedure.

B. Short Bolt Test Procedure:

1. Measure the bolt length. The bolt length is defined as the distance from the end of the threaded portion of the shank to the underside of the bolt head.
2. Install the nut on the bolt so that 3 to 5 full threads of the bolt are located between the bearing face of the nut and the underside of the bolt head. Measure and record the thread stickout of the bolt. Thread stickout is determined by measuring the distance from the outer face of the nut to the end of the threaded portion of the shank.
3. Install the bolt into a hole on the plate or girder and install the required number of washers and additional spacers as needed between the bearing face of the nut and the underside of the bolt head to produce the thread stickout measured in Step 2 of this procedure.
4. Tighten the nut using a hand wrench to a snug-tight condition. The snug condition shall be the full manual effort applied to the end of a 305 mm long wrench. This applied torque shall not exceed 20 percent of the maximum allowable torque in Table E.

Table E

Maximum Allowable Torque for High-Strength Fastener Assemblies	
Bolt Diameter (inches)	Torque (ft-lbs)
1/2	145
5/8	285
3/4	500
7/8	820
1	1220
1 1/8	1500
1 1/4	2130
1 3/8	2800
1 1/2	3700

5. Match-mark the assembly by placing a heavy reference start line on the steel plate or girder which aligns with 1) a mark placed on one corner of the nut and 2) a radial line placed across the flat on the end of the bolt or on the exposed portions of the threads of tension control bolts. Place an additional mark on the outside of the socket that overlays the mark on the nut corner such that this mark will be visible while turning the nut. Make 2 additional small marks on the steel plate or girder, one 1/3 of a turn and one 2/3 of a turn clockwise from the heavy reference start line on the steel plate or girder.
6. Using the torque wrench, tighten the nut to the rotation value listed in Table F. The rotation is measured from the heavy reference line described in Step 5 made after the bolt was snug-tight. A second wrench shall be used to prevent rotation of the bolt head during tightening. Measure and record the moving torque after this rotation has been reached. The torque shall be measured with the nut in motion.

Table F

Nut Rotation Required for Turn-of-Nut Installation <sup>(a,b)</sup>	
Bolt Length (measured in Step 1)	Required Rotation (turn)
4 bolt diameters or less	1/3
(a) Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance shall be plus or minus 30 degrees.	
(b) Applicable only to connections in which all material within grip of the bolt is steel.	

7. Tighten the nut further to the 2/3-turn mark as indicated in Table G. The rotation is measured from the heavy reference start line made on the plate or girder when the bolt was snug-tight. Verify that the radial line on the bolt end or on the exposed portions of the threads of tension control bolts is still in alignment with the start line.

Table G

Required Nut Rotation for Rotational Capacity Test	
Bolt Length (measured in Step 1)	Required Rotation (turn)
4 bolt diameters or less	2/3

8. Loosen and remove the nut and examine the threads on both the nut and bolt.

C. Short Bolt Acceptance Criteria:

1. An assembly shall pass the following requirements to be acceptable: 1) the measured moving torque from Step 6 shall be less than or equal to the maximum allowable torque from Table E, 2) the nut shall be able to be removed from the bolt without signs of thread stripping or galling after the required rotation in Step 7 has been achieved, 3) the bolt does not shear from torsion or fail during the test, and 4) the assembly shall not seize before the final rotation in Step 7 is reached. Elongation of the bolt in the threaded region between the bearing face of the nut and the underside of the bolt head will not be considered a failure. Both fastener assemblies tested from one rotational capacity lot shall pass for the rotational capacity lot to be acceptable.

**INSTALLATION TENSION TESTING AND ROTATIONAL CAPACITY TESTING AFTER ARRIVAL ON THE JOB SITE**

Installation tension tests and rotational capacity tests on high-strength fastener assemblies shall be performed by the Contractor prior to acceptance or installation and after arrival of the fastener assemblies on the project site. Installation tension tests and rotational capacity tests shall be performed at the job-site, in the presence of the Engineer, on each rotational capacity lot of fastener assemblies.

The requirements of this section do not apply to high-strength cap screws or high-strength bolts used for slip base plates.

Installation tension tests shall be performed on 3 representative fastener assemblies in conformance with the provisions in Section 8, "Installation," of the RCSC Specification. For short bolts, Section 8.2, "Pretensioned Joints," of the RCSC Specification shall be replaced by the "Pre-Installation Testing Procedures," of the "Structural Bolting Handbook," published by the Steel Structures Technology Center, Incorporated.

The rotational capacity tests shall be performed in conformance with the requirements for rotational capacity tests in "Rotational Capacity Testing Prior to Shipment to Job Site" of these special provisions.

At the Contractor's expense, additional installation tension tests, tests required to determine job inspecting torque, and rotational capacity tests shall be performed by the Contractor on each rotational capacity lot, in the presence of the Engineer, if 1) any fastener is not used within 3 months after arrival on the jobsite, 2) fasteners are improperly handled, stored, or subjected to inclement weather prior to final tightening, 3) significant changes are

noted in original surface condition of threads, washers, or nut lubricant, or 4) the Contractor's required inspection is not performed within 48 hours after all fasteners in a joint have been tensioned.

Failure of a job-site installation tension test or a rotational capacity test will be cause for rejection of unused fasteners that are part of the rotational capacity lot.

When direct tension indicators are used, installation verification tests shall be performed in conformance with Appendix Section X1.4 of ASTM Designation: F959, except that bolts shall be initially tensioned to a value 5 percent greater than the minimum required bolt tension.

**SURFACE PREPARATION**

For all bolted connections, the 1) contact surfaces, and 2) outer surfaces of existing members that are within the grip and will be hidden by surfaces of outside existing members within the grip under bolt heads, nuts, and washers, and 3) inside surfaces of bolt holes shall be cleaned and coated before assembly in conformance with the provisions for cleaning and painting structural steel of these special provisions.

**SEALING**

The perimeter around all direct tension indicator gaps shall be completely sealed with non-silicone type sealing compound conforming to the provisions in Federal Specification TT-S-230, Type II. The sealant shall be gray in color and have a minimum thickness of 1.3 mm. If painting is required, the sealing compound shall be applied prior to painting.

When zinc-coated tension control bolts are used, the sheared end of each fastener shall be completely sealed with non-silicone type sealing compound conforming to the provisions in Federal Specification TT-S-230, Type II. The sealant shall be gray in color and shall have a minimum thickness of 1.3 mm. The sealant shall be applied to a clean sheared surface on the same day that the splined end is sheared off.

**WELDING**

Table 2.2 of AWS D1.5 is superseded by the following table:

Base Metal Thickness of the Thicker Part Joined, mm	Minimum Effective Partial Joint Penetration Groove Weld Size, * mm
Over 6 to 13 inclusive	5
Over 13 to 19 inclusive	6
Over 19 to 38 inclusive	8
Over 38 to 57 inclusive	10
Over 57 to 150 inclusive	13
Over 150	16

\* Except the weld size need not exceed the thickness of the thinner part

The requirement of conformance with AWS D1.5 shall not apply to work conforming to Section 56-1, "Overhead Sign Structures," or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications.

**10-1.62 SIGN STRUCTURES**

Sign structures and foundations for overhead signs shall conform to the provisions in Section 56-1, "Overhead Sign Structures," of the Standard Specifications, "Steel Structures" of these special provisions, and the following requirements.

Before commencing fabrication of sign structures, the Contractor shall submit 2 sets of working drawings to the Engineer in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The working drawings shall include sign panel dimensions, span lengths, post heights, anchorage layouts, proposed splice locations, a snugging and tensioning pattern for anchor bolts and high-strength bolted connections, and details for permanent steel anchor bolt templates. The working drawings shall be supplemented with a written quality control program that includes methods, equipment, and personnel necessary to satisfy the requirements specified herein.



Working drawings shall be 559 mm x 864 mm or 279 mm x 432 mm in size and each drawing and calculation sheet shall include the State assigned designations for the sign structure type and reference as shown on the contract plans, District-County-Route-Kilometer Post, and contract number.

The Engineer shall have 30 days to review the sign structure working drawings after a complete submittal has been received. No fabrication or installation of sign structures shall be performed until the working drawings are approved in writing by the Engineer.

Should the Engineer fail to complete the review within the time allowance and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the sign structure working drawings, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

Steel bolts not designated on the plans as high strength (HS) or stainless steel shall be for general applications and shall conform to the requirements in ASTM Designation: A 307.

A permanent steel template shall be used to maintain the proper anchor bolt spacing.

One top nut, one leveling nut, and 2 washers shall be provided for the upper threaded portion of each anchor bolt.

Flatness of surfaces for the following shall conform to the requirements in ASTM Designation: A 6/A 6M:

1. Base plates that are to come in contact with concrete, grout, or washers and leveling nuts
2. Plates in high-strength bolted connections

No holes shall be made in members unless the holes are shown on the plans or are approved in writing by the Engineer.

Longitudinal seam welds shall have 60 percent minimum penetration, except that within 150 mm of circumferential welds, longitudinal seam welds shall be complete joint penetration (CJP) groove welds. In addition, longitudinal seam welds on structures having telescopic pole segment splices shall be CJP groove welds on the female end for a length on each end equal to the designated slip fit splice length plus 150 mm.

Steel members used for overhead sign structures shall receive nondestructive testing (NDT) in conformance with AWS D1.1 and the following:

1.

Weld Location	Weld Type	Minimum Required NDT
Splice welds around the perimeter of tubular sections, poles, and arms.	CJP groove weld with backing ring	100% UT <sup>a</sup> or RT <sup>b</sup>
Longitudinal seam welds	CJP or PJP <sup>c</sup> groove weld	Random 25% MT <sup>d</sup>
Longitudinal seam welds within 150 mm of a circumferential splice.	CJP groove weld	100% UT or RT
Welds attaching base plates, flange plates, or pole or mast arm plates, to poles or arm tubes.	CJP groove weld with backing ring and reinforcing fillet	t > 4.5 mm: 100% UT and MT t < 4.5 mm: 100% MT after root weld pass & final weld pass t = pole or arm thickness
	External (top) fillet weld for socket-type connections	100% MT

<sup>a</sup> ultrasonic testing

<sup>b</sup> radiographic testing

<sup>c</sup> partial joint penetration

<sup>d</sup> magnetic particle testing

2. The acceptance and repair criteria for UT of welded joints where any of the members are less than 8 mm thick or where tubular sections are less than 325 mm in diameter shall conform to the requirements in AWS D1.1, Section 6.13.3.1. A written procedure approved by the Engineer shall be used when performing this UT. These written procedures shall conform to the requirements in AWS D1.1, Annex K. The acceptance and repair criteria for other welded joints receiving UT shall conform to the requirements in AWS D1.1, Section 6, Table 6.3 for cyclically loaded nontubular connections.

3. The acceptance and repair criteria for radiographic or real time image testing shall conform to the requirements of AWS D1.1 for tensile stress welds.
4. For longitudinal seam welds, the random locations for NDT will be selected by the Engineer. The cover pass shall be ground smooth at the locations to be tested. If repairs are required in a portion of a tested weld, the repaired portion shall receive NDT, and additional NDT shall be performed on untested portions of the weld. The additional NDT shall be performed on 25 percent of that longitudinal seam weld. After this additional NDT is performed and if more repairs are required, then that entire longitudinal seam weld shall receive NDT.

Circumferential welds and base plate to post welds may be repaired only one time without written permission from the Engineer.

Full compensation for furnishing anchor bolt templates and for testing of welds shall be considered as included in the contract price paid per kilogram for furnish sign structure, and no additional compensation will be allowed therefor.

### **10-1.63 ROADSIDE SIGNS**

Roadside signs shall be furnished and installed at the locations shown on the plans or where designated by the Engineer and in conformance with the provisions in Section 56-2, "Roadside Signs," of the Standard Specifications and these special provisions.

Attention is directed to "Caltrans-Furnished Materials" of these special provisions regarding Caltrans-furnished guide sign panels.

The Contractor shall furnish roadside sign panels (except guide sign panels as shown on the plans) in conformance with the provisions in "Furnish Sign" of these special provisions.

Wood posts shall be pressure treated after fabrication in conformance with the provisions in Section 58, "Preservative Treatment of Lumber, Timber and Piling," of the Standard Specifications and AWP A Use Category System: UC4A, Commodity Specification A or B.

### **10-1.64 INSTALL SIGN PANEL ON EXISTING FRAME**

Sign panels shall be installed on existing frames at the locations shown on the plans or where designated by the Engineer and in conformance with the provisions in Section 56-1.06, "Sign Panels and Fastening Hardware," of the Standard Specifications and these special provisions.

Installing sign panels on existing frames will be measured by the square meter and the quantity to be paid for will be the total area, in square meters, of sign panels installed in place.

The contract price paid per square meter for install sign panel on existing frame shall include full compensation for furnishing all labor, materials (except Caltrans-furnished sign panels and mounting bolts), tools, equipment, and incidentals, and for doing all the work involved in installing sign panels on existing frames, complete in place (including removing, salvaging, and disposing of existing sign panels), as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.65 FURNISH SIGN**

Signs shall be fabricated and furnished in accordance with details shown on the plans, the Traffic Sign Specifications, and these special provisions.

Traffic Sign Specifications for California sign codes are available for review at:

<http://www.dot.ca.gov/hq/traffops/signtech/signdel/specs.htm>

Traffic Sign Specifications for signs referenced with Federal MUTCD sign codes can be found in Standard Highway Signs Book, administered by the Federal Highway Administration, which is available for review at:

[http://mutcd.fhwa.dot.gov/ser-shs\\_millennium.htm](http://mutcd.fhwa.dot.gov/ser-shs_millennium.htm)

Information on cross-referencing California sign codes with the Federal MUTCD sign codes is available at:

<http://www.dot.ca.gov/hq/traffops/signtech/signdel/specs.htm>

Temporary or permanent signs shall be free from blemishes that may affect the serviceability and detract from the general sign color and appearance when viewing during daytime and nighttime from a distance of 8 m. The face of each finished sign shall be uniform, flat, smooth, and free of defects, scratches, wrinkles, gel, hard spots, streaks, extrusion marks, and air bubbles. The front, back, and edges of the sign panels shall be free of router chatter marks, burns, sharp edges, loose rivets, delaminated skins, excessive adhesive over spray and aluminum marks.

### **QUALITY CONTROL FOR SIGNS**

The requirements of "Quality Control for Signs" in this section shall not apply to construction area signs.

No later than 14 days before sign fabrication, the Contractor shall submit a written copy of the quality control plan for signs to the Engineer for review. The Engineer will have 10 days to review the quality control plan. Sign fabrication shall not begin until the Engineer approves the Contractor's quality control plan in writing. The Contractor shall submit to the Engineer at least 3 copies of the approved quality control plan. The quality control plan shall include, but not be limited to the following requirements:

- A. Identification of the party responsible for quality control of signs,
- B. Basis of acceptance for incoming raw materials at the fabrication facility,
- C. Type, method and frequency of quality control testing at the fabrication facility,
- D. List (by manufacturer and product name) of process colors, protective overlay film, retroreflective sheeting and black non-reflective film,
- E. Recommended cleaning procedure for each product, and
- F. Method of packaging, transport and storage for signs.

No legend shall be installed at the project site. Legend shall include letters, numerals, tildes, bars, arrows, route shields, symbols, logos, borders, artwork, and miscellaneous characters. The style, font, size, and spacing of the legend shall conform to the Standard Alphabets published in the FHWA Standard Highway Signs Book. The legend shall be oriented in the same direction in accordance with the manufacturer's orientation marks found on the retroreflective sheeting.

On multiple panel signs, legend shall be placed across joints without affecting the size, shape, spacing, and appearance of the legend. Background and legend shall be wrapped around interior edges of formed panel signs as shown on plans to prevent delamination.

The following notation shall be placed on the lower right side of the back of each sign, furnished by the Contractor, where the notation will not be blocked by the sign post or frame:

- A. PROPERTY OF COUNTY OF EL DORADO,
- B. Name of the sign manufacturer,
- C. Month and year of fabrication,
- D. Type of retroreflective sheeting, and
- E. Manufacturer's identification and lot number of retroreflective sheeting.

The above notation shall be applied directly to the aluminum sign panels in 6-mm upper case letters and numerals by die-stamp and applied by similar method to the fiberglass reinforced plastic signs. Painting, screening, or engraving the notation will not be allowed. The notation shall be applied without damaging the finish of the sign.

Signs with a protective overlay film shall be marked with a dot of 10 mm diameter. The dot placed on white border shall be black, while the dot placed on black border shall be white. The dot shall be placed on the lower border of the sign before application of the protective overlay film and shall not be placed over the legend and bolt holes. The application method and exact location of the dot shall be determined by the manufacturer of the signs.

For sign panels that have a minor dimension of 1220 mm or less, no splice will be allowed in the retroreflective sheet except for the splice produced during the manufacturing of the retroreflective sheeting. For sign panels that have a minor dimension greater than 1220 mm, only one horizontal splice will be allowed in the retroreflective sheeting.

Unless specified by the manufacturer of the retroreflective sheeting, splices in retroreflective sheeting shall overlap by a minimum of 25 mm. Splices shall not be placed within 50 mm from edges of the panels. Except at the horizontal borders, the splices shall overlap in the direction from top to bottom of the sign to prevent moisture penetration. The retroreflective sheeting at the overlap shall not exhibit a color difference under the incident and reflected light.

Signs exhibiting a significant color difference between daytime and nighttime shall be replaced immediately.

Repairing sign panels will not be allowed except when approved by the Engineer.

The Department will inspect signs at the Contractor's facility and delivery location, and in accordance with Section 6, "Control of Materials," of the Standard Specifications. The Engineer will inspect signs for damage and defects before and after installation.

Regardless of kind, size, type, or whether delivered by the Contractor or by a common carrier, signs shall be protected by thorough wrapping, tarping, or other methods to ensure that signs are not damaged by weather conditions and during transit. Signs shall be dry during transit and shipped on palettes, in crates, or tier racks. Padding and protective materials shall be placed between signs as appropriate. Finished sign panels shall be transported and stored by method that protects the face of signs from damage. The Contractor shall replace wet, damaged, and defective signs.

Signs shall be stored in dry environment at all times. Signs shall not rest directly on the ground or become wet during storage. Signs, whether stored indoor or outdoor, shall be free standing. In areas of high heat and humidity signs shall be stored in enclosed climate-controlled trailers or containers. Signs shall be stored indoor if duration of the storage will exceed 30 days.

Screen processed signs shall be protected, transported and stored as recommended by the manufacturer of the retroreflective sheeting.

When requested, the Contractor shall provide the Engineer test samples of signs and materials used at various stages of production. Sign samples shall be 300 mm x 300 mm in size with applied background, letter or numeral, and border strip.

The Contractor shall assume the costs and responsibilities resulting from the use of patented materials, equipment, devices, and processes for the Contractor's work.

### **SHEET ALUMINUM**

Alloy and temper designations for sheet aluminum shall be in accordance with ASTM Designation: B209.

The Contractor shall furnish the Engineer a Certificate of Compliance in accordance to Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for the sheet aluminum.

Sheet aluminum shall be pretreated in accordance to ASTM Designation: B449. Surface of the sheet aluminum shall be cleaned, deoxidized, and coated with a light and tightly adherent chromate conversion coating free of powdery residue. The conversion coating shall be Class 2 with a mass between 108 mg/m<sup>2</sup> and 377 mg/m<sup>2</sup>, and an average mass of 269 mg/m<sup>2</sup>. Following the cleaning and coating process, the sheet aluminum shall be protected from exposure to grease, oils, dust, and contaminants.

Sheet aluminum shall be free of buckles, warps, dents, cockles, burrs, and defects resulting from fabrication.

Base plate for standard route marker shall be die cut.

### **RETROREFLECTIVE SHEETING**

The contractor shall furnish retroreflective sheeting for sign background and legend in accordance with ASTM Designation: D4956 and "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

Retroreflective sheeting shall be applied to sign panels as recommended by the retroreflective sheeting manufacturer without stretching, tearing, and damage.

Class 1, 3, or 4 adhesive backing shall be used for Type II, III, IV, VII, VIII, and IX retroreflective sheeting. Class 2 adhesive backing may also be used for Type II retroreflective sheeting. The adhesive backing shall be pressure sensitive and fungus resistant.

When the color of the retroreflective sheeting determined from instrumental testing is in dispute, the Engineer's visual test will govern.

### **PROCESS COLOR AND FILM**

The Contractor shall furnish and apply screened process color, non-reflective opaque black film, and protective overlay film of the type, kind, and product that are approved by the manufacturer of the retroreflective sheeting.

The Contractor shall furnish the Engineer a Certificate of Compliance in accordance to Section 6-1.07, "Certificates of Compliance," of the Standard Specifications for the screened process color, non-reflective opaque black film, and protective overlay film.

The surface of the screened process color shall be flat and smooth. When the screened process colors determined from the instrumental testing in accordance to ASTM Designation: D4956 are in dispute, the Engineer's visual test will govern.

The Contractor shall provide patterns, layouts, and set-ups necessary for the screened process.

The Contractor may use green, red, blue, and brown reverse-screened process colors for background and non-reflective opaque black film or black screened process color for legend. The coefficient of retroreflection for reverse-screened process colors on white retroreflective sheeting shall not be less than 70 percent of the coefficient of retroreflection specified in ASTM Designation: D4956.

The screened process colors and non-reflective opaque black film shall have the same outdoor weatherability as that of the retroreflective sheeting.

After curing, screened process colors shall withstand removal when tested by applying 3M Company Scotch Brand Cellophane Tape No. 600 or equivalent tape over the color and removing with one quick motion at 90° angle.

#### **SINGLE SHEET ALUMINUM SIGN**

Single Sheet aluminum signs shall be fabricated and furnished with or without frame. The Contractor shall furnish the sheet aluminum in accordance to "Sheet Aluminum" of these special provisions. Single sheet aluminum signs shall be fabricated from sheet aluminum alloy 6061-T6 or 5052-H38.

Single Sheet aluminum signs shall not have a vertical splice in the sheet aluminum. For signs with depth greater than 1220 mm, one horizontal splice will be allowed in the sheet aluminum.

Framing for single sheet aluminum sign shall consist of aluminum channel or rectangular aluminum tubing. The framing shall have a length tolerance of  $\pm 3$  mm. The face sheet shall be affixed to the frame with rivets of 5-mm diameter. Rivets shall be placed within the web of channels and shall not be placed less than 13 mm from edges of the sign panels. Rivets shall be made of aluminum alloy 5052 and shall be anodized or treated with conversion coating to prevent corrosion. The exposed portion of rivets on the face of signs shall be the same color as the background or legend where the rivets are placed.

Finished signs shall be flat within a tolerance of  $\pm 3$  mm per meter when measured across the plane of the sign in all directions. The finished signs shall have an overall tolerance within  $\pm 3$  mm of the detailed dimensions.

Aluminum channels or rectangular aluminum tubings shall be welded together with the inert gas shielded-arc welding process using E4043 aluminum electrode filler wires as shown on the plans. Width of the filler shall be equal to wall thickness of smallest welded channel or tubing.

#### **MEASUREMENT AND PAYMENT**

Furnishing signs (except for construction area signs, guide signs as shown on plans and overhead signs) will be measured by the square meter and the quantity to be paid for will be the total area, in square meters, of the sign panel types installed in place.

The contract price paid per square meter for furnish sign of the types specified in the Engineer's estimate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in fabricating and furnishing the signs, including fastening hardware, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for furnishing and installing protective overlay on signs shall be considered as included in the contract price paid per square meter for furnish sign of the various types and no separate payment will be made therefor.

#### **10-1.66 CLEAN AND PAINT STRUCTURAL STEEL**

New metal surfaces (excluding sign structures) and connections to existing steel shall be cleaned and painted in conformance with the provisions in Section 59-2, "Painting Structural Steel," Section 59-3, "Painting Galvanized Surfaces," and Section 91, "Paint," of the Standard Specifications and these special provisions.

#### **GENERAL**

The existing paint systems consist of materials listed in "Existing Highway Facilities" of these special provisions.

Before performing any painting or paint removal, the Contractor shall submit to the Engineer, in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications, 3 copies of a separate Painting Quality Work Plan (PQWP) for each item of work for which painting or paint removal is to be performed. As a minimum, each PQWP shall include the following:

- A. The name of each Contractor or subcontractor to be used.

- B. One copy each of all current ASTM and "SSPC: The Society for Protective Coatings" specifications or qualification procedures applicable to the painting or paint removal to be performed. These documents shall become the permanent property of the Department.
- C. A copy of the coating manufacturer's guidelines and recommendations for surface preparation, painting, drying, curing, handling, shipping, and storage of painted structural steel, including testing methods and maximum allowable levels for soluble salts.
- D. Proposed materials, methods, and equipment to be used for any paint application.
- E. Proof of each of any required certifications, SSPC-QP 1, SSPC-QP 2, SSPC-QP 3. Where SSPC-QP 3 certification is required, an enclosed shop facility shall be required. Certification of AISC Sophisticated Paint Endorsement Quality Program, P-1 Enclosed endorsement, will be considered equivalent to SSPC-QP 3.
  - 1. In lieu of certification in conformance with the requirements in SSPC-QP 1 for this project, the Contractor may submit written documentation showing conformance with the requirements in Section 3, "General Qualification Requirements," of SSPC-QP 1.
- F. Proposed methods to control environmental conditions in accordance with the manufacturer's recommendations and these special provisions.
- G. Proposed methods to protect the coating during curing, shipping, handling, and storage.
- H. Proposed rinse water collection plan.
- I. A detailed paint repair plan for the repair of damaged areas.
- J. Procedures for containing blast media and water during application of coatings and coating repair of erected steel.
- K. Examples of proposed daily reports for all testing to be performed, including type of testing, location, lot size, time, weather conditions, test personnel, and results.

Before submitting the PQWP, a pre-painting meeting between the Engineer, the Contractor, and a representative from each entity performing painting for this project shall be held to discuss the requirements for the PQWP.

The Engineer shall have 20 days to review the PQWP submittal after a complete plan has been received. No painting or paint removal shall be performed until the PQWP for that work is approved by the Engineer. Should the Engineer fail to complete the review within this time allowance and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the PQWP, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The Engineer's approval of the Contractor's PQWP shall not relieve the Contractor of any responsibility under the contract for the successful completion of the work in conformity with the requirements of the plans and specifications.

The Contractor shall provide enclosures to permit cleaning and painting during inclement weather. Provisions shall be made to control atmospheric conditions inside the enclosures within specified limits during cleaning and painting operations, drying to solvent insolubility, and throughout the curing period in accordance with the manufacturer's recommendations and these special provisions. Full compensation for providing and maintaining such enclosures shall be considered as included in the prices paid for the various contract items of work requiring paint and no additional compensation will be allowed therefor.

Fresh, potable water with a maximum chloride content of 75 mg/L and a maximum sulfate content of 200 mg/L shall be used for water rinsing or pressure washing operations. No continuous recycling of rinse water will be permitted. If rinse water is collected into a tank and subsequent testing determines the collected water conforms to the specified requirements, reuse may be permitted by the Engineer if no collected water is added to the tank after sample collection for determination of conformance to specified requirements.

## **CLEANING**

New metal surfaces and areas of connections to existing steel, except where galvanized, shall be dry blast cleaned and dry spot blast cleaned, respectively, in conformance with the requirements in SSPC-SP 10, "Near White Blast Cleaning," of the "SSPC: The Society for Protective Coatings." Blast cleaning shall leave surfaces with a dense, uniform, angular anchor pattern of no less than 40  $\mu\text{m}$  nor more than 86  $\mu\text{m}$  as measured in conformance with the requirements in ASTM Designation: D 4417.

The areas of connections to existing steel to be dry spot blast cleaned shall consist of, as a minimum:

- A. New and existing contact surfaces and existing member surfaces under bolt heads, nuts or washers of high-strength bolted connections,
- B. Exposed bare surfaces of existing steel remaining after trimming, cutting, drilling or reaming, and
- C. Areas of existing steel within a 100-mm radius measured in any direction from the point of application of heat for welding or flame cutting.

The inside surfaces of bolt holes shall be cleaned in conformance with the requirements in SSPC-SP 1, "Solvent Cleaning," of the "SSPC: The Society for Protective Coatings," and visible rust shall be removed.

Mineral and slag abrasives used for blast cleaning steel surfaces shall conform to the requirements for Class A, Grade 2 to 3 abrasives contained in SSPC-AB 1, "Mineral and Slag Abrasives," of the "SSPC: The Society for Protective Coatings," and shall not contain hazardous material.

Steel abrasives used for blast cleaning steel surfaces shall comply with the requirements of SSPC-AB 3, "Ferrous Metallic Abrasive," of the "SSPC: The Society for Protective Coatings." If steel abrasive is recycled through shop or field abrasive blast cleaning units, the recycled abrasive shall conform to the requirements of SSPC-AB 2, "Specification for Cleanliness of Recycled Ferrous Metallic Abrasive," of the "SSPC: The Society for Protective Coatings."

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications and a Material Safety Data Sheet shall be furnished before use for each shipment of blast cleaning material for existing steel.

Abrasive blast cleaned surfaces shall be tested by the Contractor for soluble salts using a Class A or B retrieval method as described in Technology Guide 15, "Field Methods for Retrieval and Analysis of Soluble Salts on Steel and Other Nonporous Substrates," of the "SSPC: The Society for Protective Coatings," and cleaned so the maximum level of soluble salts does not exceed the lesser of the coating manufacturer's written recommendations or 10 micrograms per square centimeter. Areas of abrasive blast cleaned steel shall be tested at the rate of 3 tests for the first 100 square meters prepared per day, and one test for each additional 100 square meters or portion thereof, at locations selected by the Engineer. When less than 100 square meters of surface area is prepared in a shift, at least 2 tests shall be performed. If levels of soluble salts exceed the maximum allowed by these special provisions, the entire area represented by the testing will be rejected. The Contractor shall perform additional cleaning and testing of rejected areas until soluble salt levels conform to these requirements.

Corners shall be chamfered to remove sharp edges.

Thermal cut edges (TCEs) to be painted shall be conditioned before blast cleaning by shallow grinding or other method approved by the Engineer to remove the thin, hardened layer of material resulting from resolidification during cooling.

Visually evident base metal surface irregularities and defects shall be removed in accordance with ASTM Designation: A 6 or AASHTO Designation: M 160 before blast cleaning steel. When material defects exposed by blast cleaning are removed, the blast profile shall be restored by either blast cleaning or by using mechanical tools in accordance with SSPC-SP 11, "Power Tool Cleaning to Bare Metal," of the "SSPC: The Society for Protective Coatings."

## **PAINTING**

Blast cleaned surfaces shall receive a single undercoat of an exterior grade latex paint supplied by the manufacturer of the inorganic zinc coating.

The single undercoat shall consist of an inorganic zinc coating conforming to the requirements in AASHTO Designation: M 300, Type I or Type II, except that:

- A. The first 3 sentences of Section 4.7, "Primer Field Performance Requirements," shall not apply for Type II coatings, and
- B. The entire Section 5.6.1 shall not apply for either type of inorganic zinc coating.

If the Contractor proposes to use a Type I coating, the Contractor shall furnish to the Engineer for review documentation as required in Section 5.6 of AASHTO Designation: M 300. The Contractor shall allow the Engineer 30 days to review the proposal. Type I coatings selected for use shall meet the current applicable volatile organic compound limits for the air district in which the project is located.

If the Contractor proposes to use a Type II coating, the coating shall be selected from the qualified products list, which may be obtained from the Transportation Laboratory.

The inside surfaces of bolt holes shall be painted with one application of a zinc rich primer (organic vehicle type) after the application of the undercoat of inorganic zinc on adjacent steel. The steel surfaces adjacent to the bolt holes shall be kept clean and protected from drippings during the application of the primer.

Inorganic zinc coating shall be used within 12 hours of initial mixing.

Application of inorganic zinc coating shall conform to provisions for applying zinc-rich coating in Section 59-2.13, "Application of Zinc-Rich Primer," of the Standard Specifications.

The single undercoat of inorganic zinc coating shall be applied to the required dry film thickness in 2 or more applications within 8 hours of the start of blast cleaning. Abrasive blast cleaned steel shall not be exposed to relative humidity exceeding 85 percent before application of inorganic zinc coating.

The total dry film thickness of all applications of the inorganic zinc undercoat, including the surfaces of outside existing members within the grip under bolt heads, nuts and washers, shall be not less than 100  $\mu\text{m}$  nor more than 200  $\mu\text{m}$ , except that the total dry film thickness on each faying (contact) surface of high strength bolted connections shall be between 25  $\mu\text{m}$  and the maximum allowable dry film thickness for Class B coatings as determined by certified testing in conformance with Appendix A of the "Specification for Structural Joints Using ASTM A325 or A490 Bolts" of the Research Council on Structural Connections (RCSC Specification). Unless otherwise stated, all inorganic zinc coatings used on faying surfaces shall meet the slip coefficient requirements for a Class B coating on blast-cleaned steel, as specified in the RCSC Specification. The Contractor shall provide results of certified testing showing the maximum allowable dry film thickness for the Class B coating from the qualifying tests for the coating chosen, and shall maintain the coating thickness on actual faying surfaces of the structure at or below this maximum allowable coating thickness.

Areas where mudcracking occurs in the inorganic zinc coating shall be blast cleaned and repainted with inorganic zinc coating to the specified thickness.

Steel surfaces coated with Type II inorganic zinc coating shall be protected from conditions that may cause the coating film to dissolve. The Contractor, at the Contractor's expense, shall repair areas where the coating has dissolved by blast cleaning and repainting with inorganic zinc coating to the specified thickness.

Dry spray, or overspray, as defined in the Steel Structures Painting Manual, Volume 1, "Good Painting Practice," of the "SSPC: The Society for Protective Coatings," shall be removed before application of subsequent coats or final acceptance. Removal of dry spray shall be by screening or other methods that minimize polishing of the inorganic zinc surface. The dry film thickness of the coating after removal of dry spray shall be in conformance with the provisions for applying the single undercoat, as specified herein.

The Contractor shall test the inorganic zinc coating before application of finish coats. The locations of the tests will be determined by the Engineer. The Contractor shall determine the sequence of the testing operations. The testing for adhesion and hardness shall be performed no sooner than 72 hours after application of the single undercoat of inorganic zinc coating. Satisfactory access shall be provided to allow the Engineer to determine the location of the tests.

The inorganic zinc coating shall pass the following tests:

- A. The inorganic zinc coating shall have a minimum adhesion to steel of 4 MPa when measured using a self-aligning adhesion tester in conformance with the requirements in ASTM Designation: D 4541. The Engineer will select 3 locations per girder or 100 square meters of painted surface, whichever is less, for adhesion testing. If less than 100 square meters of steel is painted in a work shift, the Engineer will select 3 areas painted during the work shift for testing. If 2 or more of the locations tested fail to meet adhesion requirements, the entire area represented by the tests will be rejected. If one of the locations tested fails to meet adhesion requirements, an additional 3 locations shall be tested. Should any of the additional locations fail to meet adhesion requirements, the entire area represented by the tests will be rejected. The Contractor, at the Contractor's expense, shall repair the rejected area by blast cleaning and repainting with inorganic zinc to the specified thickness. Test locations for areas of inorganic zinc meeting adhesion testing requirements shall be repaired by application of organic zinc primer as specified in Section 91-1.04, "Materials," of the Standard Specifications to the specified minimum dry film thickness.
- B. Areas of inorganic zinc coating where finish coats are to be applied shall be tested for soluble salts using a Class A or B retrieval method as described in Technology Guide 15, "Field Methods for Retrieval and Analysis of Soluble Salts on Steel and Other Nonporous Substrates," of the "SSPC: The Society for Protective Coatings," and cleaned so the maximum level of soluble salts does not exceed the lesser of the manufacturer's written recommendations or 10 micrograms per square centimeter. Areas of inorganic zinc



coating shall be tested at the rate of 3 tests for the first 100 square meters to be painted per day and one test for each additional 100 square meters or portion thereof at locations selected by the Engineer. When less than 100 square meters of surface area is painted in a shift, at least 2 tests shall be performed. If levels of soluble salts exceed the maximum allowed by these special provisions, the entire area represented by the testing will be rejected. The Contractor shall perform additional cleaning and testing of rejected areas until soluble salt levels conform to these requirements.

- C. The inorganic zinc coating shall exhibit a solid, hard, and polished metal surface when firmly scraped with the knurled edge of a quarter. Inorganic zinc coating that is powdery, soft, or does not exhibit a polished metal surface, as determined by the Engineer, shall be repaired by the Contractor, at the Contractor's expense, by blast cleaning and repainting with inorganic zinc coating to the specified thickness.

#### **Additional Requirements for Water Borne Inorganic Zinc Primers**

- A. The surface pH of the inorganic zinc primer shall be tested by wetting the surface with de-ionized water for a minimum of 15 minutes but no longer than 30 minutes and applying pH paper with a capability of measuring in increments of 0.5 pH units. At least 2 surface pH readings shall be taken for every 50 square meters or portion thereof. If less than 50 square meters of steel is coated in a single shift or day, at least 2 surface pH readings shall be taken for primer applied during that period. Application of finish coats will not be permitted until the surface pH is less than or equal to 7.
- B. Dry to solvent insolubility for water borne inorganic zinc primers shall be determined in conformance with the requirements in ASTM Designation: D 4752, except that water shall be the solvent. The resistance rating shall be not less than 4. Areas of inorganic zinc coating shall be tested for solvent insolubility at the rate of one test per 50 square meters or portion thereof. Inorganic zinc coating represented by the tested area that does not meet the solvent insolubility requirements will be rejected. The Contractor, at the Contractor's expense, shall repair rejected areas by blast cleaning and repainting with inorganic zinc coating to the specified thickness.

#### **Additional Requirements for Solvent Borne Inorganic Zinc Primers**

- A. Dry to solvent insolubility for solvent borne inorganic zinc primers shall be determined in conformance with the requirements in ASTM Designation: D 4752. The resistance rating shall be not less than 4. Areas of inorganic zinc coating shall be tested for solvent insolubility at the rate of one test per 50 square meters or portion thereof. Inorganic zinc coating represented by the tested area that does not meet the solvent insolubility requirements will be rejected. The Contractor, at the Contractor's expense, shall repair rejected areas by blast cleaning and repainting with inorganic zinc coating to the specified thickness.
- B. Surface hardness of solvent borne inorganic zinc shall be a minimum 2H when measured in conformance with the requirements in ASTM Designation: D 3363. Areas of inorganic zinc coating shall be tested at the rate of one test per 50 square meters or portion thereof. Inorganic zinc coating that fails to meet the surface hardness requirements shall be repaired by the Contractor, at the Contractor's expense, by blast cleaning and repainting with inorganic zinc coating to the specified thickness.

The Contractor, at the Contractor's expense, shall retest all rejected areas of inorganic zinc coating after repairs have been completed.

Exposed areas of inorganic zinc coating shall receive a minimum of 2 finish coats of an exterior grade latex paint supplied by the manufacturer of the inorganic zinc coating.

All areas of inorganic zinc coating to receive finish coats shall be water rinsed in conformance with the requirements in Section 59-1.03, "Application," of the Standard Specifications and these special provisions. Areas of the coating removed by water rinsing shall be reapplied in conformance with the provisions for applying zinc-rich coating in Section 59-2.13, "Application of Zinc-Rich Primer," of the Standard Specifications and these special provisions. Except as approved by the Engineer, a minimum time of 72 hours shall be allowed between application of inorganic zinc coating and water rinsing.

The first finish coat shall be applied within 48 hours following the water rinsing.

The finish coat paint shall be formulated for application to inorganic zinc coating, shall meet the requirements for SSPC-Paint 24, "Latex Semi-Gloss Exterior Topcoat," of the "SSPC: The Society for Protective Coatings," and shall conform to the following:

- A. No visible color change in the finish coats shall occur when tested for 800 hours in conformance with the requirements in ASTM Designation: D 4587, Test Cycle 2.
- B. The vehicle shall be an acrylic or modified acrylic copolymer with a minimum of necessary additives.

The first finish coat shall be applied in 2 applications. The first application shall consist of a spray applied mist application. The second application shall be applied after the mist application has dried to a set to touch condition as determined by the procedure described in Section 7 of ASTM Designation: D1640. The first finish coat color shall match Federal Standard 595B No. 34272. The total dry film thickness of both applications of the first finish coat shall be not less than 50  $\mu\text{m}$ .

Except as approved by the Engineer, a minimum drying time of 12 hours shall be allowed between finish coats.

The second finish coat color shall match Federal Standard 595B No. 14090. The total dry film thickness of all applications of the second finish coat shall be not less than 50  $\mu\text{m}$ .

The 2 finish coats shall be applied in 3 or more applications to a total dry film thickness of not less than 100  $\mu\text{m}$  nor more than 200  $\mu\text{m}$ .

The total dry film thickness of all applications of inorganic zinc coating and finish coat paint shall be not less than 200  $\mu\text{m}$  nor more than 350  $\mu\text{m}$ .

Cleaning and painting of existing contact surfaces of high strength bolted connections that contain rust, loose paint, or other foreign substances, except loose dirt and dust, will be considered as extra work as specified in Section 4-1.03D, "Extra Work," of the Standard Specifications. Cost of repair of damage to existing paint caused by the Contractor's operations shall be borne by the Contractor.

#### **MEASUREMENT AND PAYMENT**

Dry spot blast cleaning and undercoat painting of blast cleaned areas of existing surfaces will be measured by the square meter of spot blast cleaned areas, and will be paid for as spot blast clean and paint undercoat.

The contract price paid per square meter for spot blast clean and paint undercoat shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in dry spot blast cleaning and painting undercoat on the existing surfaces complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract lump sum price paid for clean and paint structural steel shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in cleaning and painting the exposed surfaces of the new structural steel and finish coat on undercoated areas of existing metal, complete in place, including water rinsing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### **10-1.67 PREPARE AND PAINT CONCRETE SURFACES**

This work shall consist of preparing and painting concrete surfaces, where shown on the plans, and in conformance with these special provisions.

##### **Materials**

The paint shall be a light-stable, alkali-resistant, acrylic latex or acrylic latex copolymer emulsion, commercially manufactured for use as an exterior concrete coating. The paint shall conform to the provisions in Section 91-4.05, "Paint: Acrylic Emulsion, Exterior White and Light and Medium Tints," of the Standard Specifications.

The paint shall be formulated and applied so that the color of the coated concrete matches the architectural treatment of the bridge on State Route 50 in the City of Placerville at the intersection with Missouri Flat Road. A minimum of four colors shall be used to capture the color variation from the darkest to the lightest shades.

The Contractor shall submit to the Engineer, not less than one week prior to initial application of the concrete coating, a copy of the manufacturer's recommendations and written application instructions.

##### **Test Panel**

A test panel at least 1.25 m x 1.25 m in size shall be successfully completed at a location approved by the Engineer before beginning work on architectural texture or painting concrete. The test panel shall be constructed, finished, and painted with the materials, tools, equipment, personnel, and methods to be used in constructing, finishing, and painting the concrete surfaces. If ordered by the Engineer, additional test panels shall be constructed and finished until the specified finish, texture, and color are obtained, as determined by the Engineer.

The test panel approved by the Engineer shall be used as the standard for comparison in determining acceptability of the architectural texture and painting for concrete surfaces.

The Contractor shall submit to the Engineer, not less than one week prior to initial application of the concrete coating to the test panel, a copy of the manufacturer's recommendations and written application instructions.

#### **Surface Preparation**

New concrete surfaces to be painted shall be cured in conformance with the provisions in Section 90-7.03, "Curing Structures," of the Standard Specifications.

Concrete surfaces to be painted shall be prepared in conformance with the requirements of SSPC-SP 13, "Surface Preparation of Concrete," of the Structural Steel Painting Council. After concrete surface preparation is complete, the Contractor shall clean all concrete surfaces to be painted by water rinsing as defined in Section 59-1.03, "Application," of the Standard Specifications.

#### **Painting Concrete**

The coating shall be applied per the manufacturer's recommendations and in conformance with the requirements of SSPC-SP 11, "Guide for Coating Concrete," of the Structural Steel Painting Council.

Any damaged areas shall be repaired in the same manner as the original surface preparation and paint application.

#### **Measurement and Payment**

Concrete surfaces to be prepared and painted will be measured by the square meter. Measurement will be determined along the surface of the actual areas painted.

The contract price paid per square meter for prepare and paint concrete surfaces shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing of and applying paint to concrete surfaces, complete in place, including construction of test panels and repairing damaged areas, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.68 REINFORCED CONCRETE PIPE**

Reinforced concrete pipe shall conform to the provisions in Section 65, "Reinforced Concrete Pipe," of the Standard Specifications and these special provisions.

#### **GENERAL**

Where embankment will not be placed over the top of the pipe, a relative compaction of not less than 85 percent shall be required below the pipe spring line for pipe installed using Method 1 backfill in trench, as shown on Standard Plan A62D. Where the pipe is to be placed under the traveled way, a relative compaction of not less than 90 percent shall be required unless the minimum distance between the top of the pipe and the pavement surface is the greater of 1.2 meters or one half of the outside diameter of the pipe.

Except as otherwise designated by classification on the plans or in the specifications, joints for culvert and drainage pipes shall conform to the plans or specifications for standard joints.

When reinforced concrete pipe is installed in conformance with the details shown on Standard Plan A62DA, the fifth paragraph of Section 19-3.04, "Water Control and Foundation Treatment," of the Standard Specifications shall not apply.

When solid rock or other unyielding material is encountered at the planned elevation of the bottom of the bedding, shown on Standard Plan A62DA, the material below the bottom of the bedding shall be removed to a depth of 1/50 of the height of the embankment over the top of the culvert, but not less than 150 mm nor more than 300 mm. The resulting trench below the bottom of the bedding shall be backfilled with structure backfill material in conformance with the provisions in Section 19-3.06, "Structure Backfill," of the Standard Specifications. The Outer Bedding shall not be compacted prior to placement of the pipe.

#### **MATERIALS**

The concrete for reinforced concrete pipe must contain not less than 280 kg of cementitious material per cubic meter with a water-cementitious material ratio not to exceed 0.35 by weight. Supplementary cementitious material is optional. Reinforcement shall have a minimum cover of 25 mm.

## **MEASUREMENT AND PAYMENT**

The excavation and backfill below the planned elevation of the bottom of the bedding shown on Standard Plan A62DA will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

### **10-1.69 CORRUGATED METAL PIPE**

Corrugated steel pipe culverts shall conform to the provisions in Section 66, "Corrugated Metal Pipe," of the Standard Specifications and these special provisions.

Corrugated steel pipe shall be fabricated from zinc-coated steel sheet.

### **10-1.70 UNDERDRAIN**

Perforated plastic pipe underdrains shall conform to the provisions in Section 68-1, "Underdrains," of the Standard Specifications.

### **10-1.71 OVERSIDE DRAIN**

Steel entrance tapers, metal pipe downdrain anchor assemblies, and corrugated steel pipe downdrains shall conform to the provisions in Section 69, "Overside Drains," of the Standard Specifications and these special provisions.

Steel entrance tapers and pipe downdrains shall be fabricated from zinc-coated steel sheet.

### **10-1.72 MISCELLANEOUS FACILITIES**

Concrete and steel flared end sections and precast concrete pipe inlets shall conform to the provisions in Section 70, "Miscellaneous Facilities," of the Standard Specifications.

### **10-1.73 SLOPE PROTECTION**

Slope protection and minor concrete (ditch lining) shall be placed or constructed in conformance with the provisions in Section 72, "Slope Protection," of the Standard Specifications and these special provisions.

Rock slope protection fabric shall be woven or nonwoven type fabric, Type A or Type B, at the option of the Contractor.

### **10-1.74 MISCELLANEOUS CONCRETE CONSTRUCTION**

Minor concrete curb, gutter, sidewalk and driveway, island paving, gutter and textured paving shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the Standard Specifications and these special provisions.

Curb ramp detectable warning surface shall consist of raised truncated domes constructed or installed on curb ramps in conformance with the details shown on the plans and these special provisions. At the option of the Contractor, the detectable warning surface shall be prefabricated, cast-in-place, or stamped into the surface of the curb ramp. The color of the detectable warning surface shall be yellow conforming to Federal Standard 595B, Color No. 33538.

Prefabricated detectable warning surface shall be in conformance with the requirements established by the Department of General Services, Division of State Architect and be attached in conformance with the manufacturer's recommendations.

Cast-in-place and stamped detectable warning surfaces shall be painted in conformance with the provisions in Section 59-6, "Painting Concrete," of the Standard Specifications.

The finished surfaces of the detectable warning surface shall be free from blemishes.

Prior to constructing the cast-in-place or stamping the detectable warning surface, the Contractor shall demonstrate the ability to produce a detectable warning surface conforming to the details shown on the plans and these special provisions by constructing a 600-mm by 600-mm test panel.

The manufacturer shall provide a written 5-year warranty for prefabricated detectable warning surfaces, guaranteeing replacement when there is defect in the dome shape, color fastness, sound-on-cane acoustic quality, resilience, or attachment. The warranty period shall begin upon acceptance of the contract.

The contract price paid per cubic meter for minor concrete (gutter) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in constructing the gutter complete in place, including subgrade preparation as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for constructing or furnishing and installing curb ramp detectable warning surfaces, including the test panel, shall be considered as included in the contract price paid per cubic meter for minor concrete (curb, gutter, sidewalk and driveway) and no separate payment will be made therefor.

Aggregate for minor concrete (textured paving) shall conform to the grading specified for fine aggregate in Section 90-3.03, "Fine Aggregate Grading," of the Standard Specifications. Aggregate for grout shall conform to the following grading:

Sieve Sizes	Percentage Passing
4.75-mm	100
2.36-mm	90 - 100
1.18-mm	60 - 100
600- $\mu$ m	35 - 70
300- $\mu$ m	15 - 35
150- $\mu$ m	2 - 15

Color of textured paving shall be "Franciscan Red" or approved equal and the pattern shall be Cobblestone, as shown on the plans. Portland cement concrete closely conforming to the colors specified for textured paving are available through commercial concrete sources.

A sample of sufficient size, of each type and color of the textured paving, to demonstrate the textured paving, including color hardener, curing and finishing compounds, for both grouted and ungrouted finishes, shall be submitted to the Engineer for written approval.

Textured paving shall not be placed on the project prior to approval by the Engineer of the samples prepared and submitted by the Contractor. In the event more than one sample of each type and color of textured paving to be placed is required by the Engineer, each additional sample will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

Welded wire fabric, of the size and type shown on the plans and conforming to the provisions in Section 52, "Reinforcement," of the Standard Specifications, shall be placed in the textured paving areas as shown on the plans.

Aggregate base shall be Class 2 and shall conform to the provisions in Section 26, "Aggregate Bases," of the Standard Specifications.

The respective pattern types and colors of concrete for textured paving shall be placed at the locations shown on the plans, struck off and compacted until a layer of mortar is brought to the surface. The concrete shall be screeded to the required grade and cross section and floated to a uniform surface.

Floor color hardener shall be applied to the plastic surface of the concrete by the "dry-shake" method using a minimum of 30 kg of hardener per 10 m<sup>2</sup>. Hardener shall be applied in 2 applications, shall be wood-floated after each application, and shall be trowelled only after the final floating.

The forming tools for the textured paving shall be applied to form the patterned surfaces while the concrete is still in the plastic stage of set.

Textured paving areas shall be cured by the curing compound method. The curing compound shall be curing compound (6) conforming to the provisions in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications.

For payment purposes, the area in square meters of minor concrete (textured paving) will be determined from horizontal measurements of the finished textured paving.

The contract price paid per cubic meter for minor concrete (textured paving) shall include full compensation for furnishing all labor, materials (including welded wire fabric), tools, equipment, and incidentals, and for doing all the work involved in constructing textured paving, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

**10-1.75 MISCELLANEOUS IRON AND STEEL**

Miscellaneous iron and steel shall conform to the provisions in Section 75, "Miscellaneous Metal," of the Standard Specifications.

**10-1.76 MISCELLANEOUS METAL (BRIDGE)**

Miscellaneous metal (bridge) shall conform to the provisions for miscellaneous bridge metal in Section 75, "Miscellaneous Metal," of the Standard Specifications and these special provisions.

High strength rods and bearing plates at Pier 4 footing retrofits shall not be galvanized.

Attention is directed to "Welding" and "Prestressing Concrete" of these special provisions.

Miscellaneous metal (bridge) shall consist of the miscellaneous bridge metal items listed in Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications, and the following:

- A. Shear key armor
- B. High strength rods and bearing plates at Pier 4 footing retrofits

Exposed galvanized surfaces shall be prepared and painted in conformance with the provisions in Section 59-3, "Painting Galvanized Surfaces," of the Standard Specifications and these special provisions.

Exposed areas of galvanized surfaces shall receive a minimum of 2 finish coats of paint conforming to either the requirements for White Tintable Finish Paint-Waterborne, Formula PWB-164B, or an exterior grade latex paint meeting the requirements for SSPC-Paint 24, "Latex Semi-Gloss Exterior Topcoat," of the "SSPC: The Society for Protective Coatings," and conforming to the following:

- A. No visible color change in the finish coats shall occur when tested in conformance with the requirements in ASTM Designation: G 53 using FS 40 UV-B bulbs for a minimum of 38 cycles. The cycle shall be 4 hours of ultraviolet (UV) exposure at 60°C and 4 hours of condensate exposure at 40°C.
- B. The vehicle shall be an acrylic or modified acrylic copolymer with a minimum of necessary additives.

The total dry film thickness of all applications of the first finish coat shall be not less than 50 µm.

Except as approved by the Engineer, a minimum drying time of 12 hours shall be allowed between finish coats.

The second finish coat color shall match Federal Standard 595B, No. 14090. The total dry film thickness of all applications of the second finish coat shall be not less than 50 µm.

The 2 finish coats shall be applied in 2 or more applications to a total dry film thickness of not less than 100 µm nor more than 200 µm.

Full compensation for painting galvanized surfaces shall be considered as included in the contract price paid per kilogram for miscellaneous metal (bridge) and no separate payment will be made therefor.

#### **10-1.77 MISCELLANEOUS METAL (CATWALK)**

Miscellaneous metal (catwalk) shall conform to the provisions for miscellaneous bridge metal in Section 75, "Miscellaneous Metal," of the Standard Specifications and these special provisions.

Before commencing fabrication of the catwalk, the Contractor shall submit 2 sets of working drawings to the Engineer in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. The working drawings shall include element and span dimensions, lengths, heights, layouts, and proposed splice locations. The working drawings shall be supplemented with a written erection plan that includes methods, equipment, and personnel necessary to construct the catwalk.

Working drawings shall be 559 mm x 864 mm or 279 mm x 432 mm in size and each drawing and calculation sheet shall include the State assigned designations for the bridge name, bridge number, District-County-Route-Kilometer Post, and contract number.

The Engineer shall have 30 days to review the catwalk working drawings after a complete submittal has been received. No fabrication or installation of catwalk shall be performed until the working drawings are approved in writing by the Engineer.

Should the Engineer fail to complete the review within the time allowance and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the catwalk working drawings, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

Attention is directed to "Welding", "Clean and Paint Structural Steel" and "Miscellaneous Metal (Bridge)" of these special provisions.

Perforated steel plank shall be hot dip galvanized. All other catwalk materials shall be painted.

Full compensation for painting the catwalk shall be considered as included in the contract price paid per kilogram for miscellaneous metal (catwalk) and no separate payment will be made therefor.

#### **10-1.78 BRIDGE DECK DRAINAGE SYSTEM**

Bridge deck drainage systems shall conform to the provisions for miscellaneous bridge metal in Section 75, "Miscellaneous Metal," of the Standard Specifications and these special provisions.

Self-tapping screws used for sleeve connections shall be hex-head stainless steel, installed in holes drilled to fit the self-tapping screws, conforming to the requirements of ASTM Designation: A 276, Type 316.

Bridge deck drainage systems will be measured and paid for by the kilogram in the same manner specified for miscellaneous metal (bridge) in Section 75-1.06, "Measurement," and Section 75-1.07, "Payment," of the Standard Specifications.

#### **10-1.79 CHAIN LINK FENCE**

Chain link fence shall be Type CL-1.8 and shall conform to the provisions in Section 80, "Fences," of the Standard Specifications.

#### **10-1.80 MARKERS AND DELINEATORS**

Markers and delineators shall conform to the provisions in Section 82, "Markers and Delineators," of the Standard Specifications and these special provisions.

Concrete barrier delineator (400 mm) shall be as specified in "Prequalified and Tested Signing and Delineation Materials" elsewhere in these special provisions. Concrete barrier delineators (400 mm) shall be cemented to the barrier with rapid set type epoxy adhesive as provided for cementing pavement markers to pavement in Section 85-1.06, "Placement" of the Standard Specifications. Rapid set type epoxy adhesive shall conform to the requirements in Section 95-2.04, "Rapid Set Epoxy Adhesive for Pavement Markers" of the Standard Specifications. Concrete barrier delineator (400 mm) shall be applied only on clean, dry surfaces.

Concrete barrier delineators (400 mm) to be paid for will be determined as units for actual count in place.

The contract unit price paid for concrete barrier delineator (400 mm) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing concrete barrier delineators (400 mm), complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Markers and delineators on flexible posts shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions. Flexible posts shall be made from a flexible white plastic which shall be resistant to impact, ultraviolet light, ozone, and hydrocarbons. Flexible posts shall resist stiffening with age and shall be free of burns, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability.

Retroreflective sheeting for metal and flexible target plates shall be the retroreflective sheeting designated for channelizers, markers, and delineators conforming to the requirements in ASTM Designation: D 4956-95 and in conformance with the provisions in "Prequalified and Tested Signing and Delineation Materials" of these special provisions.

#### **10-1.81 REMOVABLE BOLLARD**

Galvanized steel pipe shall conform to the provisions in Section 20-2.15A, "Steel Pipe," of the Standard Specifications.

Minor concrete shall conform to Section 90, "Portland Cement Concrete" of the Standard Specifications.

Bollards shall be measured and paid for as units from actual count.

The contract unit price paid for bollards shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing bollards, complete in place, including excavation and disposal of excess material, placing gravel sump, furnishing and installing galvanized chain, placing reflective stripe, welding on clamp loop, forming sleeve in and placing concrete, seal welding cap on pipe, and concrete, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer

#### **10-1.82 METAL BEAM GUARD RAILING**

Metal beam guard railing shall be constructed in conformance with the provisions in Section 83-1, "Railings," of the Standard Specifications and these special provisions.

Attention is directed to "Order of Work" of these special provisions.

Line posts shall be wood. Blocks shall be wood.

### **ALTERNATIVE IN-LINE TERMINAL SYSTEM**

Alternative in-line terminal system shall be furnished and installed as shown on the plans and in conformance with these special provisions.

The allowable alternatives for an in-line terminal system shall consist of one of the following or a Department approved equal.

- (1) **TERMINAL SYSTEM (TYPE SKT)** - Terminal system (Type SKT) shall be a SKT 350 Sequential Kinking Terminal manufactured by Road Systems, Inc., located in Big Spring, Texas, and shall include items detailed for terminal system (Type SKT) shown on the plans. The SKT 350 Sequential Kinking Terminal can be obtained from the distributor, Universal Industrial Sales, P.O. Box 699, Pleasant Grove, UT 84062, Telephone (801) 785-0505 or from the distributor, Gregory Highway Products, 4100 13<sup>th</sup> Street, S.W., Canton, OH 44708, Telephone (330) 477-4800.
- (2) **TERMINAL SYSTEM (TYPE ET)** - Terminal system (Type ET) shall be an ET-2000 PLUS (4-tube system) extruder terminal as manufactured by Trinity Industries, Inc., and shall include items detailed for terminal system (Type ET) shown on the plans. The ET-2000 PLUS (4-tube system) extruder terminal can be obtained from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, UT 84014, Telephone (800) 772-7976.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that the terminal systems furnished conform to the contract plans and specifications, conform to the prequalified design and material requirements, and were manufactured in conformance with the approved quality control program.

Terminal systems shall be installed in conformance with the manufacturer's installation instructions and these requirements. Each terminal system installed shall be identified by painting the type of terminal system in neat black letters and figures 60 mm high on the backside of the rail element between system posts numbers 4 and 5.

For terminal system (Type ET) the steel foundation tubes with soil plates attached shall be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 100 mm thick and each layer shall be moistened and thoroughly compacted. The wood terminal posts shall be inserted into the steel foundation tubes by hand and shall not be driven. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 65°C or less. The edges of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

For terminal system (Type SKT) the soil tubes shall be, at the Contractor's option, driven with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 100 mm thick and each layer shall be moistened and thoroughly compacted. Wood posts shall be inserted into the steel foundation tubes by hand. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 65°C or less. The edges of the wood posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

Surplus excavated material remaining after the terminal system has been installed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

The contract unit price paid for alternative in-line terminal system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing alternative in-line terminal system, complete in place, including excavation, backfill and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **ALTERNATIVE FLARED TERMINAL SYSTEM**

Alternative flared terminal system shall be furnished and installed as shown on the plans and in conformance with these special provisions.

The allowable alternatives for a flared terminal system shall consist of one of the following or a Department approved equal.



- (1) **TERMINAL SYSTEM (TYPE FLEAT)** - Terminal system (Type FLEAT) shall be a Flared Energy Absorbing Terminal 350 manufactured by Road Systems, Inc., located in Big Spring, Texas, and shall include items detailed for terminal system (Type FLEAT) shown on the plans. The Flared Energy Absorbing Terminal 350 can be obtained from the distributor, Universal Industrial Sales, P.O. Box 699, Pleasant Grove, UT 84062, Telephone (801) 785-0505 or from the distributor, Gregory Highway Products, 4100 13<sup>th</sup> Street, S.W., Canton, OH 44708, Telephone (330) 477-4800.
- (2) **TERMINAL SYSTEM (TYPE SRT)** - Terminal system (Type SRT) shall be an SRT-350 Slotted Rail Terminal (8-post system) as manufactured by Trinity Industries, Inc., and shall include items detailed for terminal system (Type SRT) shown on the plans. The SRT-350 Slotted Rail Terminal (8-post system) can be obtained from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, UT 84014, Telephone (800) 772-7976.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that the terminal systems furnished conform to the contract plans and specifications, conform to the prequalified design and material requirements, and were manufactured in conformance with the approved quality control program.

Terminal systems shall be installed in conformance with the manufacturer's installation instructions and these requirements. Each terminal system installed shall be identified by painting the type of terminal system in neat black letters and figures 60 mm high on the backside of the rail element between system posts numbers 4 and 5.

For terminal system (Type SRT), the steel foundation tubes with soil plates attached shall be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 100 mm thick and each layer shall be moistened and thoroughly compacted. The wood terminal posts shall be inserted into the steel foundation tubes by hand and shall not be driven. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 65°C or less. The edges of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

For terminal system (Type FLEAT), the soil tubes shall be, at the Contractor's option, driven with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 100 mm thick and each layer shall be moistened and thoroughly compacted. Wood posts shall be inserted into the steel foundation tubes by hand. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 65°C or less. The edges of the wood posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

Surplus excavated material remaining after the terminal system has been installed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

The contract unit price paid for alternative flared terminal system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing alternative flared terminal system, complete in place, including excavation, backfill and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.83 VEGETATION CONTROL (MINOR CONCRETE)**

This work shall consist of furnishing and constructing vegetation control as specified in these special provisions, as shown on the plans and as directed by the Engineer.

#### **MATERIALS**

##### **Minor Concrete**

Concrete for vegetation control shall consist of a mixture of portland cement concrete, crumb rubber and concrete reinforcing fibers. Concrete shall conform to the provisions for minor concrete in Section 90, "Portland Cement Concrete," of the Standard Specifications and these special provisions. Components of the concrete for vegetation control shall be incorporated homogeneously at the concrete plant before delivery to the work site.

Crumb rubber for minor concrete shall be scrap tire crumb rubber consisting of ground or granulated rubber derived from a combination of passenger tires, truck tires or tire buffings. The scrap tire crumb rubber to be blended

into the concrete shall be equivalent to 3 percent by mass of the combined mixture of concrete and scrap tire crumb rubber. Crumb rubber shall be ground or granulated at ambient temperature. The maximum size of individual particles shall not exceed one millimeter in diameter and 12 mm in fibrous length or 6 mm ground rubber chips. Crumb rubber shall not contain more than 0.01 percent of wire (by mass of crumb rubber) and shall be free of contaminants, except fabric. Fabric shall not exceed 0.05 percent by mass of crumb rubber.

Reinforcing fibers for minor concrete shall consist of polypropylene fibers with an engineered sinusoidal contoured profile, manufactured specifically for use as concrete reinforcement. Reinforcing fiber shall consist of a blended ratio of 4 parts of coarse monofilament fibers with maximum individual fiber lengths of 50 mm ± 10 mm and 1 part of fine fibrillated polypropylene fibers of various lengths and thickness. Reinforcing fibers shall be of a commercial source, combined with the concrete in proportions as recommended by the manufacturer.

**Grout**

Grout for vegetation control shall conform to the provisions in Section 19-3.062, "Slurry Cement Backfill," of the Standard Specifications and these special provisions.

Not more than 110 kg of cement shall be used for each cubic meter of material produced.

Aggregate for grout shall be commercial quality concrete sand.

**Landscape Fabric**

Landscape fabric shall be manufactured from thermally spun bonded polypropylene fabric and shall conform to the following:

Specification	Minimum Requirement
Grab Tensile Strength	59 kg
Grab Elongation	70%
UV Resistance	70% @ 150 hours
Mass	102 grams per square meter

Staples for landscape fabric shall be 50 mm in width, 150 mm in length and 11-gauge wire.

A copy of the manufacturer's product sheet, together with instructions for installation, shall be furnished to the Engineer 5 business days before installation.

A Certificate of Compliance for the landscape fabric shall be furnished to the Engineer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

**SITE PREPARATION**

**Clearing**

Areas to receive vegetation control shall be cleared of trash and debris in conformance with Section 16, "Clearing and Grubbing," of the Standard Specifications and these special provisions.

Vegetation shall be removed to the ground. Cleared trash, debris and removed vegetation shall be disposed of outside the highway right of way in conformance with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

**PLACEMENT**

Landscape fabric shall be stapled to prevent shifting during concrete placement. Fabric shall lie flat, smooth, without bulges or wrinkles, and maintain uniform contact with the soil surface.

Grout shall be spread to completely fill voids as shown on the plans.

Minor concrete shall be struck off and compacted until a layer of mortar has been brought to the surface. Minor concrete shall receive a broom finish.

Two weakened plane joints shall be constructed in the minor concrete at each post location, perpendicular to the rail and in line with the edge of the grout. The joints shall be constructed to a minimum depth of 25 mm by scoring with a tool that will leave the corners rounded and ensure free movement of concrete at the joint.

The finished grade of vegetation control shall be uniform; maintaining planned flow lines, slope gradient and contours of the project site.

## **MEASUREMENT AND PAYMENT**

Quantities of vegetation control (minor concrete) will be measured by the square meter computed from measurements of actual areas placed. Vegetation control (minor concrete) placed outside the dimensions shown on the plans will not be paid for.

The contract price paid per square meter for vegetation control (minor concrete) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing vegetation control (minor concrete), including clearing trash, debris and vegetation and excavation, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.84 CABLE RAILING**

Cable railing shall conform to the provisions in Section 83-1, "Railings," of the Standard Specifications.

### **10-1.85 ACCESS BARRIER**

Access barriers shall conform to the provisions in Section 83-1, "Railings," of the Standard Specifications and these special provisions.

The contract unit price paid for access barrier shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in fabricating and installing access barriers, complete in place, including all hardware and chain link fencing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-1.86 TUBULAR BICYCLE RAILING**

Tubular railing and handrailing shall conform to the provisions in Section 83-1, "Railings," of the Standard Specifications.

### **10-1.87 CONCRETE BARRIER**

Concrete barriers shall conform to the provisions in Section 83-2, "Barriers," of the Standard Specifications and these special provisions.

If reinforcement is encountered during drilling before the specified depth is attained, the Engineer shall be notified. Unless the Engineer approves coring through the reinforcement, the hole will be rejected and the Contractor shall drill a new hole adjacent to the rejected hole to the depth shown on the plans.

Concrete for use in concrete barriers shall contain not less than 400 kg of cementitious material per cubic meter and shall be air-entrained concrete in conformance with the provisions in "Materials" of these special provisions.

Concrete barriers on bridges or walls shall be cured in conformance with the provisions in Section 90-7.01A, "Water Method," of the Standard Specifications.

Concrete barrier (Type 60 Mod) will be measured and paid for as concrete barrier (Type 60.)

Concrete barrier (Type 736A) will be measured and paid for as concrete barrier (Type 736).

Concrete barrier (Type 736A Modified) will be measured and paid for as concrete barrier (Type 736 Modified).

Concrete barrier (Type 736AR Modified) will be measured and paid for as concrete barrier (Type 736R Modified).

Concrete barrier (Type 26A Modified) will be measured and paid for as concrete barrier (Type 26 Modified).

Concrete barrier (Type 50) will be measured and paid for as concrete barrier (Type 60).

Full compensation for drilling and bonding of dowels for barrier railing shall be considered as included in the contract price paid per meter for concrete barrier (Type 736R Modified) and no separate payment will be made therefor.

### **10-1.88 TRANSITION RAILING (TYPE WB)**

Transition railing (Type WB) shall be furnished and installed in conformance with details shown on the plans, the provisions in Section 83-2, "Barriers," of the Standard Specifications and these special provisions.

The 10-gage rail elements shall conform to the requirements of Class B, Type 1 thrie beam guard railing as shown in AASHTO Designation: M 180. End caps shall conform to the requirements of Class A, Type 1 thrie beam guard railing as shown in AASHTO Designation: M 180.

Surplus excavated material remaining after the transitional railing (Type WB) has been constructed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

The contract unit price paid for transition railing (Type WB) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing transition railing (Type WB), complete in place, including drilling holes for wood posts, driving posts, backfill, and disposal of surplus material, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

**10-1.89 THERMOPLASTIC TRAFFIC STRIPE AND PAVEMENT MARKING**

Thermoplastic traffic stripes (traffic lines) and pavement markings shall be applied in conformance with the provisions in Section 84, "Traffic Stripes and Pavement Markings," of the Standard Specifications and these special provisions.

Thermoplastic material shall be free of lead and chromium, and shall conform to the requirements in State Specification PTH-02ALKYD.

Retroreflectivity of the thermoplastic traffic stripes and pavement markings shall conform to the requirements in ASTM Designation: D 6359-99. White thermoplastic traffic stripes and pavement markings shall have a minimum initial retroreflectivity of 250 mcd·m<sup>-2</sup>·lx<sup>-1</sup>. Yellow thermoplastic traffic stripes and pavement markings shall have a minimum initial retroreflectivity of 150 mcd·m<sup>-2</sup>·lx<sup>-1</sup>.

Where striping joins existing striping, as shown on the plans, the Contractor shall begin and end the transition from the existing striping pattern into or from the new striping pattern a sufficient distance to ensure continuity of the striping pattern.

Thermoplastic traffic stripes shall be applied at the minimum thickness and application rate as specified below. The minimum application rate is based on a solid stripe of 100 mm in width.

Minimum Stripe Thickness (mm)	Minimum Application Rate (kg/m)
2.5	0.5

Thermoplastic traffic stripes and pavement markings shall be free of runs, bubbles, craters, drag marks, stretch marks, and debris.

**10-1.90 PAINT TRAFFIC STRIPE AND PAVEMENT MARKING**

Painted traffic stripes (traffic lines) shall be applied in conformance with the provisions in Section 84, "Traffic Stripes and Pavement Markings," of the Standard Specifications and these special provisions.

Traffic stripe and pavement marking paint shall conform to the requirements in State Specification No. PTWB-01.

The color of the painted traffic stripes and pavement markings shall conform to the requirements in ASTM Designation: D 6628-01.

Retroreflectivity of the paint traffic stripes and pavement markings shall conform to the requirements in ASTM Designation: D 6359-99. White painted traffic stripes and pavement markings shall have a minimum initial retroreflectivity of 250 mcd·m<sup>-2</sup>·lx<sup>-1</sup>. Yellow painted traffic stripes and pavement markings shall have a minimum initial retroreflectivity of 150 mcd·m<sup>-2</sup>·lx<sup>-1</sup>.

**10-1.91 PAVEMENT MARKERS**

Pavement markers shall be placed in conformance with the provisions in Section 85, "Pavement Markers," of the Standard Specifications and these special provisions.

Attention is directed to "Traffic Control System For Lane Closure" of these special provisions regarding the use of moving lane closures during placement of pavement markers with bituminous adhesive.

The Contractor shall furnish the Engineer certificates of compliance for the pavement markers in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

Retroreflective pavement markers shall be marked as abrasion resistant on the body of the markers.

**10-1.92 FURNISH FIELD OFFICE**

This work shall consist of furnishing, maintaining, and removing a field office and associated services for the exclusive use of the County of El Dorado and Caltrans. If the Contractor

provides a field office for contractor personnel, the Engineer's field office shall be provided as an entirely separate building.

As a requirement for this project, the Contractor shall furnish on site, two offices (minimum 100 sq. Ft. Each) with a large common area (minimum 400 sq. ft.) that can support up to five inspectors for the entire time of construction. The office shall have a locking closet and a joint use bathroom (sink and toilet only required). The Contractor shall submit for Engineer's approval a floor plan of the proposed building to be used as the Engineer's field office prior to furnishing the Engineer's field office.

The Contractor shall provide the field office beginning no less than 14 days prior to beginning work, and shall be maintained continuously to no less than 21 days after final acceptance of the project, unless otherwise directed by the Engineer.

The office shall be located within the contractor yard area shown on sheet SC-1 of the contract plans or within the Parcel #2 TCE area shown on sheet SC-2 of the contract plans, as directed by the Engineer. The contractor shall maintain vehicle access and a minimum of five parking spaces adjacent to the trailer at all times. The office shall be equipped with heating and air conditioning. The office shall also have steel security bars covering the windows and an alarm system. The office shall be equipped with three separate telephone lines, one in each office and one in the common area, and a DSL or broadband connection with minimum download speed of 3.0 Mbps and minimum upload speed of 512 Kbps.

Weekly janitorial services shall be provided. Bottled drinking water delivery service shall be provided, including a water cooler.

All electrical, DSL, alarm system, and telephone utility costs for the construction office trailer shall be borne by the Contractor starting from the date of installation to the date of the trailer removal. The trailer shall not be removed without the consent and approval of the Engineer.

The contract lump sum price paid for furnish field office shall include full compensation for furnishing all labor materials, tools, equipment, and incidentals and for doing all the work involved in furnishing the field office, complete in place, including furnishings, office equipment, janitorial services, utilities, alarm system, DSL and maintenance as specified in these special provisions, and as directed by the Engineer.

## **SECTION 10-2. (BLANK)**

## **SECTION 10-3. SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS**

### **10-3.01 DESCRIPTION**

Modify signal and lighting, modify lighting and sign illumination ramp metering system , lighting (County) maintaining existing traffic management system elements during construction shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications and these special provisions.

Traffic operations system shall consist of Ramp Metering System.

Lighting equipment is included in the following structures:  
Missouri Flat Road Overcrossing Bridge, No. 25-0121

Traffic signal work shall be performed at the following locations:

- A. Missouri Flat Road/US 50 WB Ramps Intersection
- B. Missouri Flat Road/US 50 EB Ramps Intersection

### **10-3.02 COST BREAK-DOWN**

Cost break-downs shall conform to the provisions in Section 86-1.03, "Cost Break-Down," of the Standard Specifications and these special provisions.

The Engineer shall be furnished a cost break-down for each contract lump sum item of work described in this Section 10-3.

The cost break-down shall be submitted to the Engineer for approval within 15 days after the contract has been approved. The cost break-down shall be approved, in writing, by the Engineer before any partial payment for the items of electrical work will be made.

The cost breakdown shall include the following items in addition to those listed in the Standard Specifications:

- A. Detector handholes-each
- B. Removal of existing electrical.
- C. Video Detection System
- D. Emergency Vehicle Detection System
- E. County Decorative Lighting
- F. GPRS Modem
- G. Induction Sign Lighting System

Full compensation for the costs of preparing the cost break-down for each of the lump sum electrical items shall be considered as included in each of the lump sum electrical items and no separate payment will be made therefor.

### **10-3.03 MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS**

Traffic signal system shutdowns shall be limited to the lane closures listed for Missouri Flat Road

At least three working days prior to performing any work on each existing system, the Contractor shall notify the Department of Transportation, Electrical and Signal Maintenance Superintendent, Phone

### **10-3.04 MAINTAINING EXISTING TRAFFIC MANAGEMENT SYSTEM ELEMENTS DURING CONSTRUCTION**

Traffic Management System (TMS) elements include, but are not limited to ramp metering (RM) system, communication system, traffic monitoring stations, video image vehicle detection system (VIVDS), microwave vehicle detection system (MVDS), loop detection system, changeable message sign (CMS) system, extinguishable message sign (EMS) system, highway advisory radio (HAR) system, closed circuit television (CCTV) camera system, roadway weather information system (RWIS), visibility sensor, and fiber optic system.

Existing TMS elements, including detection systems, identified on the plans and located within the project limits shall remain in place, and be protected from damage. If the construction activities require existing TMS elements to be nonoperational or off line, and if temporary or portable TMS elements are not shown on the plans, the Contractor shall provide for temporary or portable TMS elements. The Contractor shall receive the Engineer's approval on the type of temporary or portable TMS elements and installation method.

Before work is performed, the Engineer, the Contractor, and the Department's Traffic Operations Electrical representatives shall jointly conduct a pre-construction operational status check of all existing TMS elements and each element's communication status with the Traffic Management Center (TMC), including existing TMS elements that are not shown on the plans and elements that may not be impacted by the Contractor's activities. The Department's Traffic Operations Electrical representatives will certify the TMS elements' location and status, and provide a copy of the certified list of the existing TMS elements within the project limits to the Contractor. The status list will include the operational, defined as having full functionality, and the nonoperational components.

The Contractor shall obtain written approval from the Engineer, at least 72 hours before interrupting existing TMS elements' communication with the TMC that will result in the elements being nonoperational or off line. The Contractor shall notify the Engineer at least 72 hours before starting excavation activities.

Traffic monitoring stations and their associated communication systems which were verified to be operational during the pre-construction operational status check, shall remain operational on freeway/highway mainline at all times, except:

1. for a duration of up to 15 days on any continuous segment of the freeway/highway longer than 3 miles
2. for a duration of up to 60 days on any continuous segment of the freeway/highway shorter than 3 miles

If the construction activities require existing detection systems to be nonoperational or off line for a longer time period or the spacing between traffic monitoring stations is more than the specified criteria above, and temporary or portable detection operations are not shown on the plans, the Contractor shall provide provisions for temporary or portable detection operations. The Contractor shall receive the Engineer's approval on the type of detection and installation before installing the temporary or portable detection.

If existing TMS elements shown on the plans or identified during the pre-construction operational status check, except traffic monitoring stations, are damaged or fail due to the Contractor's activity, where the elements are not fully functional, the Engineer shall be notified immediately. If the Contractor is notified by the Engineer that existing TMS elements have been damaged, have failed or are not fully functional due to the Contractor's activity, the damaged or failed TMS elements, excluding Structure-related elements, shall be repaired or replaced, at the Contractor's expense, within 24 hours. For a Structure-related elements, the Contractor shall install temporary or portable TMS elements within 24 hours. For nonstructure-related TMS elements, the Engineer may approve temporary or portable TMS elements for use during the construction activities.

If fiber optic cables are damaged due to the Contractor's activities, the Contractor shall install new fiber optic cables from an original splice point or termination to an original splice point or termination, unless otherwise authorized in writing by the Engineer. Fiber optic cable shall be spliced at the splice vaults if available. The amount of new fiber optic cable slack in splice vaults and the number of new fiber optic cable splices shall be equivalent to the amount of slack and number of splices existing before the damage or as directed by the Engineer. Fusion splicing will be required.

The Contractor shall demonstrate that repaired or replaced elements operate in a manner equal to or better than the replaced equipment or as directed by the Engineer. If the Contractor fails to perform required repairs or replacement work, as determined by the Engineer, the State may perform the repair or replacement work and the cost will be deducted from monies due to the Contractor.

A TMS element shall be considered nonoperational or off line for the duration of time that active communications with the TMC is disrupted, resulting in messages and commands not transmitted from or to the TMS element.

The Contractor shall provide provisions for replacing existing TMS elements within the project limits, including detection systems, that were not identified on the plans or during the pre-construction operational status check that became damaged due to Contractor's activities.

If the pre-construction operational status check identified existing TMS elements, then the Contractor, the Engineer, and the Department's Traffic Operations Electrical representatives shall jointly conduct a post construction operational status check of all existing TMS elements and each element's communication status with the TMC. The Department's Traffic Operations Electrical representatives will certify the TMS elements' status and provide a copy of the certified list of the existing TMS elements within the project limits to the Contractor. The status list will include the operational, defined as having full functionality, and the nonoperational components. TMS elements that cease to be functional between pre and post construction status checks shall be repaired at the Contractor's expense and as directed by the Engineer.

The Engineer will approve, in writing, the schedule for final replacement, the replacement methods and the replacement elements, including element types and installation methods before repair or replacement work is performed. The final TMS elements shall be new and of equal or better quality than the existing TMS elements.

## **PAYMENT**

The contract lump sum price paid for maintaining existing traffic management system elements during construction shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in maintaining existing traffic management system elements as shown on the plans, specified in the Standard specifications and these special provisions, and as directed by the Engineer.

If no electrical work exists on the project and no TMS elements are identified within the project limits, the pre-construction operational status check will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

Furnishing and installing temporary or portable TMS elements that are not shown on the plans, but are required when an existing TMS element becomes nonoperational or off line due to construction activities, will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

Furnishing and installing temporary or portable TMS elements and replacing TMS elements that are not shown on the plans nor identified during the pre-construction operational status check and were damaged by construction activities will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

If the Contractor is required to submit provisions for the replacement of TMS elements that were not identified, the provisions will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

### **10-3.05 CAST-IN-DRILLED-HOLE CONCRETE PILE FOUNDATIONS**

#### **GENERAL**

##### **Summary**

This work includes constructing cast-in-drilled-hole concrete pile foundations for traffic signal and lighting standards.

Comply with Section 86-2.03, "Foundations," of the Standard Specifications.

#### **MATERIALS**

Concrete must contain not less than 350 kilograms of cementitious material per cubic meter.

#### **CONSTRUCTION**

For standards located in sidewalk areas, the pile foundation must be:

1. Placed to final sidewalk grade before the sidewalk is placed
2. Square for the top 100 mm

Use sleeve nuts on Type 1-B standards. The bottom of the base plate of Type 1-B standards must be flush with finished grade.

#### **PAYMENT**

Payment for cast-in-drilled-hole concrete pile foundations shall conform to the provisions in Section 86-8, "Payment," of the Standard Specifications.

### **10-3.06 STANDARDS, STEEL PEDESTALS, AND POSTS**

Standards, steel pedestals, and posts for traffic signal and lighting standards shall conform to the provisions in Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications, "Steel Structures" of these special provisions, and the following requirements.

All steel poles (lighting, signal etc.) have to be released by Caltrans "METS" at the location where they are manufactured prior to shipment.

Steel bolts not designated on the plans as high-strength (HS) or stainless steel shall be for general applications and shall conform to the requirements in ASTM Designation: A 307.

Handhole reinforcement rings for standards, steel pedestals, and posts shall be continuous around the handholes.

Type 1 standards shall be assembled and set with the handhole on the downstream side of the pole in relation to traffic or as shown on the plans.

All ferrous metal parts of tubular sign structures shall be galvanized and shall not be painted.

### **10-3.07 DECORATIVE LIGHT STANDARDS**

#### **DESCRIPTION:**

Decorative lighting shall conform to the provisions in Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications and these special provisions.

#### **GENERAL:**

Decorative lighting standards shall conform to the details shown on the plans, these special provisions and El Dorado County requirements. Manufacturers information sheets and/or shop plans including horizontal lux lighting patterns shall be submitted to the Engineer for approval prior to ordering or fabricating any material.

#### **Luminaire**

Luminaire fixture shall be type III or type V with Cut-off lighting pattern. The lamp shall be 200 Watt HPS. Operating voltage shall be 240 V.

Luminaire shall be equipped with House Shield



**Pole**

Decorative pole shall be 3.65 m in heights. The finish color shall black.  
Handhole with cover shall have tamper resistant screws.

**10-3.08 CONDUIT**

Conduit to be installed underground shall be Type 3 unless otherwise specified. Detector termination conduits shall be Type 3 .

The conduit in a foundation and between a foundation and the nearest pull box shall be Type 1, or Type 3.

Conduit runs shown on the plans to be located behind curbs may be installed in the street, within 0.9-m of, and parallel with the face of the curb, by the "Trenching in Pavement Method" in conformance with the provisions in Section 86-2.05C, "Installation," of the Standard Specifications. Pull boxes shall be located behind the curb or at the locations shown on the plans.

After conductors have been installed, the ends of all conduits shall be sealed with an approved type of sealing compound.

At other locations where conduit is required to be installed under pavement and if a delay to vehicles will not exceed 5 minutes, conduit may be installed by the "Trenching in Pavement Method." "Trench in Pavement" method may be used only where there will be a pavement overlay.

**10-3.09 PULL BOXES**

Grout shall be placed in the bottom of pull boxes.

Pull boxes proposed to be installed within Caltrans' right away and in soil, must be buried 150 mm below finished grade, except for those pull boxes that supply power to the electrical equipment.. Add a polyethylene sheet over buried pull boxes to protect it from dirt, water and insects. Sheet must be 0.2" thick minimum and long enough to cover the entire pull box.

Pull boxes for circuits labeled "(COUNTY) LIGHT" on the plans shall not have the "CALTRANS" cover marking. The covers shall be marked "STREET LIGHTING".

**10-3.10 CONDUCTORS AND WIRING**

Splices shall be insulated by "Method B" only .

**10-3.11 BONDING AND GROUNDING**

Bonding and grounding shall conform to the provisions in Section 86-2.10, "Bonding and Grounding," of the Standard Specifications and these special provisions.

Bonding jumpers in standards with handholes and traffic pull box lid covers shall be attached by a UL listed lug using 4.5 mm diameter or larger brass or bronze bolts and shall run to the conduit or bonding wire in the adjacent pull box. The grounding jumper shall be visible after the standard has been installed and the mortar pad and cap have been placed on the foundation.

Standards without handholes shall have bonding accomplished by jumpers attached to UL listed ground clamps on each anchor bolt. Foundation concrete shall not be placed before the jumpers and ground clamps have been inspected by the Engineer.

For slip base standards , bonding shall be accomplished by jumpers attached to UL listed ground clamps on each anchor bolt, or a UL listed lug attached to the bottom slip base plate with a 4.5 mm diameter or larger brass or bronze bolt. Foundation concrete shall not be placed before the jumpers and ground clamps have been inspected by the Engineer

Equipment bonding and grounding conductors are required in conduits except when the conduits contain only loop lead-in cable, or signal interconnect cable. A No. 8 minimum, solid bare copper wire shall run continuously in all conduits. The bonding wire size shall be increased to match the circuit breaker size in conformance with the Code, or shall be as shown on the plans. Conduits to be installed for future conductors, may omit the copper wire.

Bonding of metallic conduits in metal pull boxes shall be by means of bonding bushings and bonding jumpers connected to the bonding wire running in the conduit system.

**10-3.12 SERVICE**

Continuous welding of exterior seams in service equipment enclosures is not required.

Type III Service equipment enclosures shall be the aluminum type.

Circuit breakers shall be the cable-in/cable-out type, mounted on non-energized clips. All circuit breakers shall be mounted vertically with the up position of the handle being the "ON" position.

Each service shall be provided with up to 2 main circuit breakers which shall disconnect ungrounded service entrance conductors. Where the "Main" circuit breaker consists of 2 circuit breakers as shown on the plans or required in the special provisions, each of the circuit breakers shall have a minimum interrupting capacity of 10 000 A, rms.

### **10-3.13 NUMBERING ELECTRICAL EQUIPMENT**

Self-adhesive reflective numbers and edge sealer shall be Contractor-furnished.

The numbers shall be placed on the equipment where designated by the Engineer.

Reflective numbers shall be applied to a clean surface. Only the edges of the numbers shall be treated with edge sealer.

Where shown on the plans, self-adhesive equipment numbers shall be placed for all electroliers, sign lighting, and service pedestals. On electroliers, the numbers shall be placed as shown on the plans.

Adhesive numbers for all locations shall be white reflective adhesive sheeting, 3" in width, with 3", Black Series D letters and numbers. The letters and numbers may be screened onto the reflective sheeting or may be die cut and adhesively attached.

The labels for each location may be individual characters applied or a continuous strip applied.

Reflective sheeting, numbers and letters shall comply with the respective specifications in the Department of Transportation publication, "Specifications for Aluminum Reflective Sheeting Signs".

### **10-3.14 STATE-FURNISHED CONTROLLER ASSEMBLIES**

The 2070 controller assemblies, excluding anchor bolts, will be State-furnished as provided under "Materials" of these special provisions.

The Contractor shall construct each controller cabinet foundation as shown on the plans for Model 334 cabinets (including furnishing and installing anchor bolts), shall install the controller cabinet on the foundation, and shall make field wiring connections to the terminal blocks in the controller cabinet.

A listing of field conductor terminations, in each State-furnished controller cabinet, will be furnished free of charge to the Contractor at the site of the work.

State forces will maintain controller assemblies. The Contractor's responsibility for controller assemblies shall be limited to conforming to the provisions in Section 6-1.02, "State-Furnished Materials," of the Standard Specifications.

### **10-3.15 LIGHT EMITTING DIODE SIGNAL MODULE**

#### **GENERAL**

#### **Summary**

This work includes installing LED signal module. Comply with Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications.

Location of LED signal module is shown on the plans. The Engineer will approve exact location.

Use LED signal module as the light source for the following traffic signal faces:

1. 300-mm section
2. 200-mm section
3. 300-mm arrow section

#### **Submittals**

Before shipping LED signal modules to job site, submit the following to the Transportation Laboratory:

1. Delivery form including district number, EA, and contact information
2. List containing all LED signal module serial numbers anticipated for use
3. LED signal modules

#### **Quality Control and Assurance**

Module must be one listed on the Pre-Qualified Products List for LED traffic signals at:

[http://www.dot.ca.gov/hq/esc/approved\\_products\\_list](http://www.dot.ca.gov/hq/esc/approved_products_list)

The State will test LED signal module shipments as specified in ANSI/ASQ Z1.4.. Testing will be completed within 30 days of delivery to the Transportation Laboratory. LED signal modules tested or submitted for testing must be representative of typical production units. LED and circular LED signal modules will be tested as specified in California Test 604. Arrow, U-turn, and bicycle LED signal modules will be tested as specified in California Test 3001. All parameters of the specification may be tested on the modules. LEDs must be spread evenly across the module. LED arrow indication must provide the minimum initial luminous intensity listed. Measurements will be performed at the rated operating voltage of 120 V(ac).

Delays resulting from submittal of non-compliant materials do not relieve you from executing the contract within the allotted time. Non-compliant materials will be rejected. You must resubmit new LED for retesting and pick up the failed units within 7 days of notification. You must provide new LED signal modules and allow a minimum of 30 days for the retest. You must pay for all shipping and handling costs related to testing and retesting. Delays resulting from resubmittal and retesting are your responsibility and no extra time will be allowed.

After testing, you must pick up the tested LED signal modules from the Transportation Laboratory and deliver to the job site.

### **Warranty**

The manufacturer must provide a written warranty against defects in materials and workmanship for LED signal modules for a minimum period of 48 months after installation of LED signal modules. Replacement LED signal modules must be provided within 15 days after receipt of failed LED modules at your expense. The State pays for shipping the failed modules to you. All warranty documentation must be submitted to the Engineer before installation. Replacement LED signal modules must be delivered to State Maintenance Electrical Shop at 30 Rickard Street, San Francisco, CA 94134, (415) 330-6509.

### **MATERIALS**

Minimum power consumption for LED signal module must be 5 W.

LED signal module must have an operational lifecycle rating of 48 months. During the operational lifecycle, LED signal module must meet all parameters of this specification.

LED signal module must be designed for installation in the door frame of standard traffic signal housing.

LED signal module must:

1. Be 1.8 kg maximum mass
2. Be manufactured for 300-mm circular, 200-mm circular, arrow, U-turn, bicycle, and lane control section
3. Be from the same manufacturer
4. Be the same model for each size
5. Be sealed units with:
  - 5.1. 2 color-coded conductors for power connection, except for lane control LED signal modules use 3 color-coded conductors.
  - 5.2. Printed circuit board and power supply contained inside and complying with Chapter 1, Section 6 of TEES published by the Department.
  - 5.3. Lens that is:
    - 5.3.1. Integral to the units
    - 5.3.2. Convex or flat with a smooth outer surface
    - 5.3.3. Made of UV stabilized plastic or glass, and withstands UV exposure from direct sunlight for 48 months without exhibiting evidence of deterioration
  - 5.4. 1-piece EPDM gasket
6. Include 1-meter long conductors with quick disconnect terminals attached as specified in Section 86-4.01C, "Electrical Components," of the Standard Specifications
7. Be sealed in door frames

- Fit into existing traffic signal section housing and comply with ITE publication, Equipment and Material Standards, Chapter 2, "Vehicle Traffic Control Signal Heads"

Individual LEDs must be wired so catastrophic loss or failure of 1 LED will not result in loss of more than 5 percent of the signal module light output. Failure of an individual LED in a string must not result in loss of entire string or other indication.

No special tools for installation are allowed.

**300-mm Arrow**

Comply with Section 9.01 of ITE publication, Equipment and Material Standards, Chapter 2, "Vehicle Traffic Control Signal Heads" for arrow indications.

Approximate shape and size for the bicycle signal face is shown on the plans.  
300-mm Lane Control

LED signal module must:

- Be weather tight and connect directly to electrical wiring.
- Be capable of optical unit replacement.
- Be a single, self-contained device, ready for installation into traffic signal housing.
- Have manufacturer's name, trademark, model number, serial number, lot number, month and year of manufacture, and required operating characteristics, including rated voltage, power consumption, and volt-ampere, permanently marked on the back of the module.
- Have a symbol of module type and color. Symbol must be 25 mm in diameter. Color must be written out in 13 mm high letters next to the symbol.
- Be AlInGaP technology for red and yellow indications and gallium nitride technology for green indications.
- Be ultra bright type rated for 100,000 hours of continuous operation from -40 °C to +74 °C.
- Have a maximum power consumption as follows:

LED Signal Module Type	Power Consumption Requirements					
	Power Consumption (Watts)					
	Red		Yellow		Green	
	25 °C	74 °C	25 °C	74 °C	25 °C	74 °C
300-mm circular	11	17	22	25	15	15
200-mm circular	8	13	13	16	12	12
300-mm arrow	9	12	10	12	11	11
300-mm U-turn	9	12	10	12	11	11
Bicycle	11	17	22	25	15	15
Programmed Visibility	11	17	22	25	15	15
Lane Control (X)	9	12	--	--	--	--
Lane Control (Arrow)	--	--	--	--	11	11

Lens may be tinted, or may use transparent film or materials with similar characteristics to enhance "ON/OFF" contrasts. Tinting or other materials to enhance "ON/OFF" contrast must not affect chromaticity and must be uniform across the face of the lens.

If polymeric lens is used, surface coating or chemical surface treatment must be applied for front surface abrasion resistance.

Power supply must be integral to the module.

Internal components must be adequately supported to withstand mechanical shock and vibration from high winds and other sources.

Lens and LED signal module material must comply with the ASTM specifications for that material.

Enclosures containing either the power supply or electronic components of LED signal module, except lenses, must be made of UL94VO flame-retardant material.

If a specific mounting orientation is required, the LED signal module must have prominent and permanent vertical markings for accurate indexing and orientation within the signal housing. Markings must include an up arrow, or the word "UP" or "TOP."

LED signal module must meet or exceed the following values when operating at 25 °C:

**Minimum Initial Intensities for Circular Indications (cd)**

Angle (v,h)	200-mm			300-mm		
	Red	Yellow	Green	Red	Yellow	Green

2.5, ±2.5	157	314	314	399	798	798
2.5, ±7.5	114	228	228	295	589	589
2.5, ±12.5	67	133	133	166	333	333
2.5, ±17.5	29	57	57	90	181	181
7.5, ±2.5	119	238	238	266	532	532
7.5, ±7.5	105	209	209	238	475	475
7.5, ±12.5	76	152	152	171	342	342
7.5, ±17.5	48	95	95	105	209	209
7.5, ±22.5	21	43	43	45	90	90
7.5, ±27.5	12	24	24	19	38	38
12.5, ±2.5	43	86	86	59	119	119
12.5, ±7.5	38	76	76	57	114	114
12.5, ±12.5	33	67	67	52	105	105
12.5, ±17.5	24	48	48	40	81	81
12.5, ±22.5	14	29	29	26	52	52
12.5, ±27.5	10	19	19	19	38	38
17.5, ±2.5	19	38	38	26	52	52
17.5, ±7.5	17	33	33	26	52	52
17.5, ±12.5	12	24	24	26	52	52
17.5, ±17.5	10	19	19	26	52	52
17.5, ±22.5	7	14	14	24	48	48
17.5, ±27.5	5	10	10	19	38	38

LED signal module must meet or exceed the following illumination values for 48 months when operating over a temperature range of -40 °C to + 74 °C. Yellow LED signal module must meet or exceed the following illumination values for 48 months, when operating at 25 °C:

**Minimum Maintained Intensities for Circular Indications (cd)**

Angle (v,h)	200-mm			300-mm		
	Red	Yellow	Green	Red	Yellow	Green

2.5, ±2.5	133	267	267	339	678	678
2.5, ±7.5	97	194	194	251	501	501
2.5, ±12.5	57	113	113	141	283	283
2.5, ±17.5	25	48	48	77	154	154
7.5, ±2.5	101	202	202	226	452	452
7.5, ±7.5	89	178	178	202	404	404
7.5, ±12.5	65	129	129	145	291	291
7.5, ±17.5	41	81	81	89	178	178
7.5, ±22.5	18	37	37	38	77	77
7.5, ±27.5	10	20	20	16	32	32
12.5, ±2.5	37	73	73	50	101	101
12.5, ±7.5	32	65	65	48	97	97
12.5, ±12.5	28	57	57	44	89	89
12.5, ±17.5	20	41	41	34	69	69
12.5, ±22.5	12	25	25	22	44	44
12.5, ±27.5	9	16	16	16	32	32
17.5, ±2.5	16	32	32	22	44	44
17.5, ±7.5	14	28	28	22	44	44
17.5, ±12.5	10	20	20	22	44	44
17.5, ±17.5	9	16	16	22	44	44
17.5, ±22.5	6	12	12	20	41	41
17.5, ±27.5	4	9	9	16	32	32

LED signal module must comply with the following chromaticity requirements for 48 months when operating over a temperature range of -40 °C to +74 °C.

**Chromaticity Standards (CIE Chart)**

Red	Y: not greater than 0.308, or less than 0.998 - x
Yellow	Y: not less than 0.411, nor less than 0.995 - x, nor greater than 0.452
Green	Y: not less than 0.506 - 0.519x, nor less than 0.150 + 1.068x, nor more than 0.730 - x

LED signal module must operate:

1. At a frequency of 60 Hz ± 3 Hz, over a voltage range from 95 V(ac) to 135 V(ac), without perceptible flicker to the unaided eye. Fluctuations of line voltage must have no visible effect on luminous intensity of the indications. Rated voltage for measurements must be 120 V(ac).
2. Compatible with currently used controller assemblies, including solid state load switches, flashers, and conflict monitors. Comply with TEES Chapters 3 and 6. If a 20 mA alternating current or less is applied to the unit, the voltage read across the 2 leads must be 15 V(ac) or less.

Wiring and terminal block must comply with Section 13.02 of ITE publication, Equipment and Material Standards, Chapter 2, "Vehicle Traffic Control Signal Heads." Electrical connection for each Type 1 LED signal module must be 2 secured, color-coded, 1-meter long, 600 V(ac), 20 AWG minimum stranded jacketed copper wires. Wires must comply with NEC, rated for service at +105 °C. Three wires must be used for lane control LED signal module.

LED signal module on-board circuitry must:

1. Include voltage surge protection to withstand high-repetition noise transients. The voltage surge protection must comply with NEMA Standard TS2, Section 2.1.6.
2. Comply with FCC, Title 47, SubPart B, Section 15 regulations for Class A emission limits for electronic noise.

LED signal module must provide a power factor of 0.90 or greater.

Total harmonic distortion from current and voltage induced into an alternating current power line by LED signal module must not exceed 20 percent at an operating temperature of 25 °C.

When power is applied to LED signal module, light emission must occur within 90 ms.

### **Red and Yellow Flashing LED Signal Module**

No external circuitry to flash the LED signal module is allowed. Use 12 V(dc) or 120 V(ac).

Flashing LED signal module circuitry must prevent perceptible light emission to the unaided eye when a voltage, 50 V(ac) or less for alternating current or 5 V(dc) for 12 V(dc) flasher units, is applied to the unit.

Electrical connection for each flashing LED signal module must be 4 secured, color-coded, 600 V(ac), 20 AWG minimum stranded jacketed copper wires. Wire must comply with NEC, rated for service at +105 °C. Conductors for flashing LED signal module must be 1 meter in length, with quick disconnect terminals attached, and must comply with Section 86-4.01C, "Electrical Components," of the Standard Specifications. The color code is as follows:

#### **Color Code Requirements**

Function	Color
Neutral/DC common	white
Steady On	red
Flash On	brown
Flash Out	orange

Flashing LED signal module must include all necessary electronics to:

1. Operate in a "Steady On" mode
2. Perform, in "Flash On" mode, 50 to 60 flashes per minute with a 50 percent  $\pm$  5 duty cycle
3. Allow alternating flashing operation, wig-wag, if the "Steady On" input of another flashing LED signal module is connected

When power is applied to the "Flash On" control conductor, the control output must allow a 12 V(dc) or 120 V(ac) signal that is switched opposite of the flash state of the module. Output must be able to source a maximum of 2.5 A for 12 V(dc), or 0.3 A for 120 V(ac).

Do not use the power consumption from "Flash Out" output of the flashing LED signal module when determining maximum power consumption.

The flashing LED Signal module must be clearly marked on the back, as "DC FLASHER" or "AC FLASHER", in 13-mm letters.

### **10-3.16 BATTERY BACKUP SYSTEM**

#### **DESCRIPTION**

The battery back up system (BBS) shall consist of an external cabinet, an inverter/charger, a power transfer relay, a manual bypass switch, a temperature probe, hardware, a battery harness, and interconnect wiring. The BBS will be Contractor-furnished. The Contractor shall attach the external cabinet, install the temperature probe, assemble and install the BBS external cabinet, install the batteries, connect the battery wiring harness, and make wiring connections.

#### **MATERIAL**

The Contractor shall furnish batteries suitable for outdoor applications.

Batteries shall:

- A. have voltage rating 12 V,
- B. be group size 24,
- C. be 75 to 80 ampere-hour at 20 hour rate,
- D. be commercially available and stocked locally,
- E. have a carrying handle,
- F. be marked with date code and maximum recharge data and recharge cycles,



- G. have 2 top mounted terminal posts with recessed thread lugs for 6.35 mm diameter, 20 thread count per 25.4 mm bolts,
- H. be fully charged when furnished, and
- I. be free from damage or deformities.

The Contractor shall provide 4 batteries per BBS installation.

The batteries shall be deep cycle, sealed prismatic lead-calcium based absorbed glass mat/valve regulated lead acid (AGM/VRLA).

The batteries shall be certified by the manufacturer to operate over a temperature range of -25°C to 74°C.

The Contractor shall submit the battery data sheet to the Engineer when the batteries are delivered to the jobsite. The data sheet shall include the following features:

- A. model number,
- B. serial number,
- C. dimensions,
- D. charts,
- E. table of discharge rating,
- F. product information,
- G. battery specifications, and
- H. conductivity reading per battery (in Siemens).

The batteries shall have a written warranty against defects in materials and workmanship from the manufacturer prorated for a period of 60 months after installation. The Contractor shall provide the Engineer with all warranty documentation prior to installation. Replacement batteries shall be provided within 5 days after receipt of failed batteries at no cost to the State except the cost of shipping the failed batteries. Replacement batteries shall be delivered to Caltrans Maintenance Electrical Shop at 30 Rickard Street, San Francisco, CA 94134, (415) 330-6509.

#### **MOUNTING AND CONFIGURATION**

Details for attaching the external cabinet to the controller cabinet and for wiring the State-furnished BBS will be provided in an information handout described in "Project Information" of these special provisions.

The Contractor shall mount the external cabinet to the controller cabinet on the side opposite the police panel, and as shown on the plans or in the information handout.

The Contractor shall apply a pliable seal composed of caulking compound or mastic around the gap between the external cabinet and the controller cabinet.

#### **Functional Testing**

The BBS functional test shall include at least 30 minutes of continuous, satisfactory operation with utility power turned off. Testing will be performed in the presence of the Engineer.

#### **MEASUREMENT AND PAYMENT**

Each battery backup system will be measured as a complete unit.

The contract unit price paid for battery backup system shall include full compensation for furnishing all labor, materials tools, equipment, and incidentals and for doing all the work involved in installing the battery backup system, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

### **10-3.17 LIGHT EMITTING DIODE PEDESTRIAN SIGNAL FACE MODULES**

#### **GENERAL**

##### **Summary**

This work includes installing LED pedestrian signal face (PSF) module into standard Type A pedestrian signal housing. Comply with Section 86, "Signals, Lighting and Electrical Systems," of the Standard Specifications.

##### **Submittals**

Before shipping LED PSF modules to job site, submit the following to the Transportation Laboratory:

1. Delivery form including district number, EA, and contact information
2. List containing all LED PSF module serial numbers anticipated for use
3. LED PSF modules

The manufacturer shall provide a written warranty against defects in materials and workmanship for LED signal modules for a period of 60 months after installation of LED signal modules. Replacement LED signal modules shall be provided within 5 days after receipt of failed LED signal modules at no cost to the County, except the cost of shipping the failed modules. All warranty documentation shall be given to the Engineer prior to installation. Replacement LED signal modules shall be delivered to El Dorado County DOT Maintenance Electrical Shop at 2441 Headington Road, Placerville, CA 95667.

Loop detector sensor units will be State-furnished in conformance with the provisions in "Materials" of these special provisions

Detector handholes shall be precast reinforced concrete with cast iron frame and cover. Handhole covers shall be secured with two 8mm x 38mm stainless steel screws.

Saw slot for loop conductors shall not cut through the cast iron frame around the top of the handhole box. Entry shall be through a hole drilled through the side of the handhole box below the frame.

Loop wire shall be Type 2.

Loop detector lead-in cable shall be Type B.

All front type C loops shall be parallel connected or spliced.

Slots shall be filled with elastomeric sealant or hot-melt rubberized asphalt sealant. Asphaltic emulsion sealant may be used, where dense graded asphalt concrete surfacing will be placed over installed loop conductors,.

The depth of loop sealant above the top of the uppermost loop wire in the sawed slots shall be 50 mm, minimum. The depth of loop sealant may be reduced to 25mm if additional dense graded asphalt concrete will be placed over the loop detectors.

### **10-3.18 VIDEO IMAGE DETECTION SYSTEM**

#### **DESCRIPTION**

The Video Image Detection System (VIDS) shall consist of enclosed and environmentally protected Video Image Sensor assemblies (VIS) and mounting hardware to install the assemblies on poles or mast-arms as shown on the plans. Necessary Video Detection Units (VDU) including image processors and extension modules as well as power supplies, surge suppression, cables, connectors and wiring to a State Furnished type 332 traffic control cabinet shall be included.

The system shall include software and firmware needed to detect vehicle presence, count and speed. Included in the software shall be the means to set-up detection zones, test the detector performance as well as view the video scenes and to operate and adjust the system from a remote location. The work includes an initial site analysis, work to set-up and configure the system, to calibrate the device performance and to verify detector accuracy.

#### **SUBMITTALS**

- A. Certificate of Compliance** - The Contractor shall provide the Engineer a Certificate of Compliance from the manufacturer, in conformance with the provisions of Section 86-1.07, "Certificates of Compliance," of the Standard Specifications. The document shall certify that the selected VIDS product model is the latest proven design, has been in standard production for a minimum of three months, has been tested and is compliant with the requirements stated in this specification.
- B. Site Analysis Report** – Prior to any detector installation the Contractor shall review each detection site and provide a written analysis recommending the optimum detector placement for meeting the performance requirements stated in the "Quality" section of this SSP. The analysis shall have been reviewed and approved by the manufacturer.
- C. Lane Configuration** - The documentation shall include a diagram that details each VIDS sensor assembly including placement, mounting height, selected lens viewing angle and illustration of how the detection zone will map into reporting contact outputs to cover the traffic lanes shown on the plans. The diagram

shall describe how the VIDS output connector pins or wire terminals correspond to the lane assignments. The Engineer will determine the acceptability of this documentation.

- D. Field Demonstration** - Upon request of the Engineer and as part of the drawing submittal process, the Contractor may be required to perform a field demonstration of the VIDS at a particular site selected to approximate the conditions under which the system will need to operate for the project. During the demonstration the unit must prove it can meet the requirements of this SSP. The engineer has the right to reject the material if the demonstration fails to show the device compliant.
- E. Configuration Record** - The contractor shall provide a Windows 2000/NT compatible Compact Disk (CD) that contains the final zone designs as well as calibration settings formatted in a manner that will allow the same configuration to be re-installed and re-used when
- F. Mounting and Wiring Information** - One set of the approved detailed diagrams for each VIDS system shall be submitted to the Engineer for approval. The approved diagrams shall includes wiring and service connections and be covered separately on each side with clear self-adhesive plastic and placed in a heavy-duty plastic envelope. The envelope shall be attached securely to the inside of the cabinet door or at a location designated by the Engineer.
- G. Communication Protocol** - A document shall be provided that fully defines the unit's open communication protocol (message structure organization, data packet length as well as information necessary to make use of such messages) and information needed for operating the system from a remote Windows 2000/NT based Personal Computer (PC).
- H. Calibration Programming** - The Contractor shall provide a Windows 2000/NT compatible Compact Disk (CD) that contains set-up and calibration software which observes the vehicular traffic, automatically places detection lanes and sets the detector sensitivity. The information provided shall match the equipment calibrated and include files that allow the same configuration to be reused when necessary.
- I. Detector Accuracy Analysis** -The Contractor shall submit to the Engineer a detector accuracy analysis that conforms to requirements of the "Measurement" section of this SSP within fifteen days of detector testing. The original video recordings as well as DVD or CD copies of the video images covering the analysis periods shall be included.
- J. Acceptance Testing Documentation**- The Contractor shall provide documentation to utilize the support equipment. The documentation shall allow the Engineer to perform acceptance testing using the documentation alone, without assistance from the Contractor or sub-Contractors.
- K. Acceptance Testing Schedule**- The contractor shall submit a testing schedule to the Engineer for approval fifteen days prior to acceptance testing of the VIDS. If the testing period extends beyond the normal working shift or beginning peal hours or if the Contractor fails to provide the necessary material for the testing within one hour of the scheduled testing start time, the Engineer may cancel testing for the day.

## QUALITY

The VIDS shall detect the presence of vehicles at the limit line, intermediate and advanced detection loop positions as shown on the plans and provide corresponding detector contact outputs to the Model 170E or Model 2070 input files. Under all lighting and weather conditions the VIDS shall provide contact outputs that report detected vehicle presence for each approach with better than 98 percent average five minute accuracy and with average 30 second variance between -0 percent and + five percent when compared to video recorded vehicle observations. The VIDS shall hold presence for vehicles stopped in a detection zone for up to 15 minutes.

The VIDS shall count vehicles and detect speed under all lighting and weather conditions with an average five minute accuracy of better than 95 percent for each approach when compared to video recorded vehicle observations.

Equipment and parts shall be new and conform with the manufacturer's recommendations. This includes support equipment required by the Engineer for acceptance testing of the VIDS unit(s). No substitutions of materials shall be allowed that deviate from the list of materials approved by the Engineer. The date of manufacture, as shown by date codes or serial numbers of electronic circuit assemblies, shall not be older than six months from the scheduled start date of this installation. System elements shall be designed to operate continuously in an outdoor traffic monitoring and control environment, 24 hours a day. Manufacturing quality and electronic components shall support a minimum mean time between failure (MTBF) of ten (10) years.

## MATERIALS

The video image sensor assembly (VIS) shall, at a minimum, include the video sensor, a zoom lens and weatherproof enclosure. The video sensor shall use a Charged Coupled Device (CCD) element and support NTSC and RS170 video output formats with resolution of not less than 480 horizontal lines. The video sensor shall include

an Auto-Gain Control circuit (AGC), have a minimum sensitivity to scenes luminance from 0.1 lux to 10,000 lux and produce a usable video image of vehicles, under all roadway lighting conditions and regardless of the time of day. The sensor shall have a motorized lens with variable focus and zoom control with a minimum aperture of  $f/1.4$  and focal length from 2.8 to 6.4 mm.

The VIS image sensor and lens shall be housed in an environmentally sealed enclosure, waterproof and dust tight to NEMA 4 standards. The enclosure shall include a thermostat controlled heater to prevent condensation and to assure proper lens operation at low temperatures. The enclosure shall include an adjustable sun shield with provision to divert water from the sensor field of view. The assembly shall have water tight connections for power, control and video signal cables and wiring.

The enclosed video image sensor assembly shall operate satisfactorily in an outdoor environment over a temperature range from  $-34^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  and 0 percent to 100 percent relative humidity. The installed assembly shall weigh less than 3 kg and present less than 930 sq cm of effective wind surface in any dimension.

Sensor unit mounting hardware shall be stainless steel or treated to withstand 250 hours of salt fog exposure under ASTM-B117 conditions without any visible corrosive damage.

2 video image sensors (VIS) shall be connected to a Video Detection Unit (VDU) installed in a Model 2070 controller and cabinet. The VDU consisting of image processors, extension modules and video output assemblies shall insert into the controller input file slots using the edge connector to obtain limited 24VDC power and to provide contact closure outputs. Cabling to a "D" connector on the front of the VDU is acceptable. No rewiring to the standards 332 cabinet shall be allowed. The various modules shall conform to the requirements detailed in Chapter 1 as well as Sections 5.2.8, 5.2.8.1, 5.2.8.2, 5.4.1, 5.4.5, 5.4.5, and 5.4.6, 5.5.1, 5.5.5, and 5.5.6 of the Transportation Electrical Equipment Specifications (TEES)

The VIDS shall include software and firmware for designing and placing the necessary detection pattern or zones at the intersection or approach. Creation of the detection zones shall be done by use of a graphic user interface that is designed so that a trained State employee can configure and calibrate a lane in less than 15 minutes. The system shall support normal operation of existing detection zones while a zone is being added or modified. The zone will flash or change color on a viewing monitor whenever a vehicle is detected.

Each VIS shall support a minimum of six user defined detection zones. The contractor shall logically combine such detection zones into reporting contact outputs that are equivalent to detection loops shown on the plans. The VIDS shall support a minimum of 32 optically isolated detection outputs. that can be set for presence, pulse, extend and delay and operate with the accuracy stated in the "QUALITY" section above.

Each VID shall support a minimum of three separate detection pattern or zone arrangements that can be automatically enacted by timed schedule or by a remote operator over a network connection. The system shall be able to automatically detect a low-visibility condition such as fog and respond by selecting a predefined detection patterns and by placing all defined detection zones in a constant call mode if necessary. The detector outputs shall assume a fail-safe "on" or "call" for presence detection in the event of loss of video signal or power failure. The VIDS shall automatically recover from a power failure restoring normal operation without requiring manual intervention. VIDS shall maintain the configuration and calibration information in memory while powered off for at least 90 days.

The VIDS shall be able to locally record and store vehicle count data in one minute to 60 minute intervals for a minimum of 2500 periods.

The VDU front panel shall have indications for power, communication, presence of video input for each video sensor as well as the real time detection indication of each detection contact output as well as a detector test switch. The test switch shall have positions that allow the user to place either a constant or momentary call on one each channel. The indication shall be visible in daylight from 1.5 m away.

The VDU shall provide a minimum of 4 video connections that support the NTCS video output format and allow diagnostic testing as well as local and remote viewing of video from the VID sensors installed on the pole or mast arm. The VDU shall include the means for the user to switch to any VID signal at an intersection and independently view any selected scene while video recording any other scene without interfering with the detector's output operation.

The VIDS shall have a serial communication port that supports the National Transportation Communication for ITS Protocol (NTCIP), the point to point protocol (PPP) and the Ethernet protocol. The detector shall be addressable and shall download count and speed data when poled remotely. The protocol shall support sensor unit setup, diagnostics and operation from a local Windows 2000/NT compatible laptop or from a remote location with a desktop computer and standard phone modem.

The power supply or transformer for the VIS sensor assembly shall meet the following minimum requirements:

	Power Supply	Transformer
Power Cord	Standard 120VAC, 3 prong cord, at least 1 meter in length (may be added by Contractor)	Standard 120VAC, 3 prong cord, at least 1 meter in length (may be added by Contractor)
Type	Switching mode type	Class 2
Rated Power	Two time (2x) full system load	Two time (2x) full system load
Operating Temperature	From -30°C to +70°C	From -30°C to +70°C
Operating Humidity Range	From 5 percent to 95	From 5 percent to 95
Input Voltage	From 85 V to 120 VAC	From 85V to 120 VAC
Input Frequency	From 85V to 120VAC	From 85V to 120 VAC
Inrush Current	Cold start, 25 A max. at 115 V	N/A
Output Voltage	As required by the VIDS	As required by the VIDS
Overload Protection	From 105 percent to 150 percent in output pulsing mode	Power limited at >150%
Over Voltage Protection	From 115 percent to 135 percent of rated output voltage	N/A
Setup, Rise, Hold Up	800ms, 50ms, 15ms at 115VAC	N/A
Withstand Voltage	I/P-0/P:3kV, I/P-FG:1.5kV, for 60 sec.	I/P-0/P:3kV, I/P-FG:1.5kV, for 60 sec
Working Temperature	70°C@30%	70°C@30%
Safety Standards	UL 1012, TUV EN60950	UL 1585
EMC Standards	EN55022 Class B, EN61000-4-2, 3, 4, 5 and EN61000-3-2, 3	N/A

Each VIS sensor assembly shall be wired to the controller cabinet with a connectorized cable harness that included all control wiring in addition to a coaxial video cable. The connector shall be a standard Mil Type and rated plug. The cable type and wire characteristics shall meet the manufacturer's recommendations for the respective VIS to cabinet distances of this project. Wiring and cables shall run continuously (without splices) between the VIS sensor and controller cabinet. A minimum of two meter slack of cable shall be coiled in the bottom of the controller cabinet or as directed by the Engineer. The serial data communication output conductors shall be terminated at TB-0, and continue for a minimum of three meters to a DB9F connector for setup and diagnostic access. The ends of unused and spare conductors shall be coiled and taped to prevent accidental contact to other circuits. Conductors inside the cabinet shall be labeled for the functions as depicted in the approved detailed diagrams.

Field terminated circuits shall include transient protection that complies with IEEE Standard 587-1980 Category C. Video connections shall be isolated from ground.

## CONSTRUCTION

Video detection performance is recognized to be substantially influenced by the quality of the physical installation including selection of camera locations, cabling and connector integrity as well as zone design, detector set-up and calibration. The contractor shall conduct a site analysis of each installation and provide a written recommendation for optimum camera placement per the "submittal" section of this SSP.

The Contractor shall provide, as part of the VIDS system, all calibration equipment required to setup, calibrate, verify performance and maintain the VIDS system. The Contractor shall provide the Engineer with at least two spares of any special tools needed for the installation, acceptance testing, operation and maintenance of the VIDS.

The Contractor shall provide programming and software required to support the VIDS system. The programming and software shall be installed in the appropriate equipment at the time of acceptance testing, and shall be used for the acceptance test.

The Contractor shall verify the performance of each unit individually and submit the recorded medium and other materials to the Engineer at the conclusion of the test. The accuracy of each unit shall be determined and documented so that each unit may be approved or rejected separately by the Engineer. Failure to submit the materials at the conclusion of testing invalidates the test. The recorded media serves as acceptance evidence and shall not be used for calibration. The calibration shall have been completed prior to testing and verification.

The Contractor shall provide equipment, software, documentation, support equipment, and any other materials, personnel and devices that may be required for the acceptance testing. The Contractor shall notify the Engineer 15

working days before the unit is ready for acceptance testing. Testing shall be scheduled to be accomplished before the end of the normal work shift.

The Contractor shall provide a minimum of 8 hours of training by a factory authorized representative for up to 20 students selected by the Engineer. The content of the training shall include instruction on how to align, program, adjust, calibrate and maintain the unit. The Contractor shall provide materials and equipment for the training. The Contractor shall give the Engineer 15 working days notice prior to the training. The time and location shall be agreed upon by the Engineer and the Contractor. If no agreement can be reached, the Engineer shall determine the time and location.

**MEASUREMENT**

Presence detection accuracy shall be based on the observed operation of the detection contact outputs where such outputs can be logical combinations of several detection zones or elements. Detection errors shall be defined as follows:

Item	Error	Description
1	False Detection	When an output reports a vehicle presence when no vehicle is observed
2	Multiple Detection	When a vehicle is detected on entering the zone but the output reports more than once
3	Detection with Latch	When a vehicle is detected but the output remains on after the vehicle has left
4	Failure to Detect	When a vehicle is not detected at all while in the zone and the output fails to report a presence
5	Drop After Detection	When a vehicle is initially detected but the output report is dropped while the vehicle remains present.

The Engineer will review the data findings and accept or reject the results within 7 days. Determination of any vehicle anomalies or unusual occurrences will be decided by the Engineer. Data or counts that are not agreed upon by the Engineer shall be considered errors and count against the unit's calibration. If the Engineer determines that the DIDS does not meet the performance requirements, the Contractor will have seven days to re-calibrate and re-test the unit and re-submit new test data. Following three failed attempts, the Contractor shall replace the VIDS detector with a new unit.

**10-3.19 EMERGENCY VEHICLE DETECTOR SYSTEM**

Each traffic signal shall have an emergency vehicle detector system which shall conform to the details shown on the plans and these special provisions.

**GENERAL**

Each emergency vehicle detector system shall consist of an optical emitter assembly or assemblies located on the appropriate vehicle and an optical detector/discriminator assembly or assemblies located at the traffic signal.

Emitter assemblies are not required for this project except units for testing purposes to demonstrate that the systems perform as specified. Tests shall be conducted in the presence of the Engineer as described below under "System Operation" during the signal test period. The Engineer shall be given a minimum of 2 working days notice prior to performing the tests.

Each system shall permit detection of 2 classes of authorized vehicles. Class I (mass transit) vehicles shall be detected at ranges of up to 300 m from the optical detector. Class II (emergency) vehicles shall be detected at ranges up to 550 m from the optical detector.

Class I signals (those emitted by Class I vehicles) shall be distinguished from Class II signals (those emitted by Class II vehicles) on the basis of the modulation frequency of the light from the respective emitter. The modulation frequency for Class I signal emitters shall be 9.639 Hz ± 0.110 Hz. The modulation frequency for Class II signal emitters shall be 14.035 Hz ± 0.250 Hz.

A system shall establish a priority of Class II vehicle signals over Class I vehicle signals and shall conform to the requirements in Section 25352 of the California Vehicle Code.

**EMITTER ASSEMBLY**

Each emitter assembly, provided for testing purposes, shall consist of an emitter unit, an emitter control unit, and connecting cables.

## **General**

Each emitter assembly, including lamp, shall operate over an ambient temperature range of -34°C to 60°C at both modulation frequencies and operate continuously at the higher frequency for a minimum of 3000 hours at 25°C ambient before failure of the lamp or other components.

Each emitter unit shall be controlled by a single, maintained-contact switch on the respective emitter control unit. The switch shall be located to be readily accessible to the vehicle driver. The control unit shall contain a pilot light to indicate that the emitter power circuit is energized and shall generate only one modulating code, either that for Class I vehicles or that for Class II vehicles.

## **Functional**

Each emitter unit shall transmit optical energy in one direction only.

The signal from each Class I signal emitter unit shall be detectable at a distance of 300 m when used with a standard optical detection/discriminator assembly and filter to eliminate visible light. Visible light shall be considered eliminated when the output of the emitter unit with the filter is less than an average of 0.0003-candela per energy pulse in the wavelength range of 380 nm to 750 nm when measured at a distance of 3 m. A Certificate of Compliance, conforming to the requirements in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications shall be submitted to the Engineer with each Class I emitter unit.

The signal from each Class II signal emitter unit shall be detectable at a distance of 550 m when used with a standard optical detection/discriminator assembly.

The standard optical detection/discriminator assembly to be used in making the range tests shall be available from the manufacturer of the system. A certified performance report shall be furnished with each assembly.

## **Electrical**

Each emitter assembly shall provide full light output with input voltages of between 12.5 V (dc) and 17.5 V (dc). An emitter assembly shall not be damaged by input voltages up to 7.5 V (dc) above supply voltage. The emitter assembly shall not generate voltage transients, on the input supply, which exceed the supply voltage by more than 4 volts.

Each emitter assembly shall consume not more than 100 W at 17.5 V (dc) and shall have a power input circuit breaker rated at 10 A to 12 A, 12 V (dc).

The design and circuitry of each emitter shall permit its use on vehicles with either negative or positive ground without disassembling or rewiring of the unit.

## **Mechanical**

Each emitter unit shall be housed in a weatherproof corrosion-resistant housing. The housing shall be provided with facilities to permit mounting on various types of vehicles and shall have provision for aligning the emitter unit properly and for locking the emitter unit into this alignment.

Each emitter control unit shall be provided with hardware to permit the unit to be mounted in or on an emergency vehicle or mass transit vehicle. Where required for certain emergency vehicles, the emitter control unit and exposed controls shall be weatherproof.

## **OPTICAL DETECTION/DISCRIMINATOR ASSEMBLY**

### **General**

Each optical detection/discriminator assembly shall consist of one or more optical detectors, connecting cable and a discriminator module.

Each assembly, when used with standard emitters, shall have a range of at least 300 m for Class I signals and 550 m for Class II signals. Standard emitters for both classes of signals shall be available from the manufacturer of the system. Range measurements shall be taken with all range adjustments on the discriminator module set to "maximum".

### **Optical Detector**

Each optical detector shall be a waterproof unit capable of receiving optical energy from two separately aimable directions. The horizontal angle between the 2 directions shall be variable from 180 degrees to 5 degrees.

The reception angle for each photocell assembly shall be a maximum of 8 degrees in all directions about the aiming axis of the assembly. Measurements of reception angle will be taken at a range of 300 m for a Type I emitter and at a range of 550 m for a Type II emitter.

Internal circuitry shall be solid state and electrical power shall be provided by the associated discriminator module.

Each optical detector shall be contained in a housing, which shall include 2 rotatable photocell assemblies, an electronic assembly and a base. The base shall have an opening to permit mounting on a mast arm or a vertical pipe nipple, or suspension from a span wire. The mounting opening shall have female threads for Size 21 conduit. A cable entrance shall be provided which shall have male threads and gasketing to permit a waterproof cable connection. Each detector shall have mass of less than 1.1 kg and shall present a maximum wind load area of 230 cm<sup>2</sup>. The housing shall be provided with weep holes to permit drainage of condensed moisture.

Each optical detector shall be installed, wired and aimed as specified by the manufacturer.

### **Cable**

Optical detector cable (EV-C) shall meet the requirements of IPCEA-S-61-402/NEMA WC 5, Section 7.4, 600-V (ac) control cable, 75°C, Type B, and the following:

A. The cable shall contain 3 conductors, each of which shall be No. 20 (7 x 28) stranded, tinned copper with low-density polyethylene insulation. Minimum average insulation thickness shall be 0.63-mm. Insulation of individual conductors shall be color coded: 1-yellow, 1-blue, 1-orange.

B. The shield shall be either tinned copper braid or aluminized polyester film with a nominal 20 percent overlap. Where film is used, a No. 20 (7 x 28) stranded, tinned, bare drain wire shall be placed between the insulated conductors and the shield and in contact with the conductive surface of the shield.

C. The jacket shall be black polyvinyl chloride with minimum ratings of 600 V (ac) and 80°C and a minimum average thickness of 1.1 mm. The jacket shall be marked as required by IPCEA/NEMA.

D. The finished outside diameter of the cable shall not exceed 8.9 mm.

E. The capacitance, as measured between any conductor and the other conductors and the shield, shall not exceed 157 pf per meter at 1000 Hz.

F. The cable run between each detector and the controller cabinet shall be continuous without splices or shall be spliced only as directed by the detector manufacturer.

### **Discriminator Module**

Each discriminator module shall be designed to be compatible and usable with a Model 170 controller unit and to be mounted in the input file of a Model 332 or Model 336 controller cabinet, and shall conform to the requirements of Chapter I of the State of California, Department of Transportation, "Traffic Signal Control Equipment Specifications."

Each discriminator module shall be capable of operating two channels, each of which shall provide an independent output for each separate input.

Each discriminator module, when used with its associated detectors, shall perform the following:

A. Receive Class I signals at a range of up to 300 m and Class II signals at a range of up to 550 m.

B. Decode the signals, on the basis of frequency, at 9.639 Hz  $\pm$  0.119 Hz for Class I signals and 14.035 Hz  $\pm$  0.255 Hz for Class II signals.

C. Establish the validity of received signals on the basis of frequency and length of time received. A signal shall be considered valid only when received for more than 0.50-second. No combination of Class I signals shall be recognized as a Class II signal regardless of the number of signals being received, up to a maximum of 10 signals. Once a valid signal has been recognized, the effect shall be held by the module in the event of temporary loss of the signal for a period adjustable from 4.5 seconds to 11 seconds in at least 2 steps at 5 seconds  $\pm$  0.5 second and 10 seconds  $\pm$  0.5 second.

D. Provide an output for each channel that will result in a "low" or grounded condition of the appropriate input of a Model 170 controller unit. For Class I signals the output shall be a 6.25 Hz  $\pm$  0.1 percent, rectangular waveform with a 50 percent duty cycle. For Class II signals the output shall be steady.

Each discriminator module shall receive electric power from the controller cabinet at either 24 V (dc) or 120 V (ac).



Each channel together with the channel's associated detectors shall draw not more than 100 mA at 24 V (dc) or more than 100 mA at 120 V (ac). Electric power, one detector input for each channel and one output for each channel shall terminate at the printed circuit board edge connector pins listed below:

**BOARD EDGE CONNECTOR PIN ASSIGNMENT**

A	DC ground		
B	+24 V (dc)	P	(NC)
C	(NC)		
D	Detector input, Channel A	R	(NC)
E	+24V (dc) to detectors	S	(NC)
F	Channel A output (C)	T	(NC)
		U	(NC)
H	Channel A output (E)	V	(NC)
J	Detector input, Channel B	W	Channel B Output (C)
K	DC Ground to detectors	X	Channel B Output (E)
L	Chassis ground	Y	(NC)
M	AC-	Z	(NC)
N	AC+		

(C) Collector, Slotted for Keying

(E) Emitter, Slotted for Keying

(NC) Not connected, cannot be used by manufacturer for any purpose.

Two auxiliary inputs for each channel shall enter each module through the front panel connector. Pin assignment for the connector shall be as follows:

- A. Auxiliary detector 1 input, Channel A
- B. Auxiliary detector 2 input, Channel A
- C. Auxiliary detector 1 input, Channel B
- D. Auxiliary detector 2 input, Channel B

Each channel output shall be an optically isolated NPN open collector transistor capable of sinking 50 mA at 30 V (ac) and shall be compatible with the Model 170 controller unit inputs.

Each discriminator module shall be provided with means of preventing transients received by the detector from affecting the Model 170 controller assembly.

Each discriminator module shall have a single connector board and shall occupy one slot width of the input file. The front panel of each module shall have a handle to facilitate withdrawal and the following controls and indicators for each channel:

- A. Three separate range adjustments each for both Class I and Class II signals.
- B. A 3-position, center-off, momentary contact switch, one position (down) labeled for test operation of Class I signals, and one position (up) labeled for test operation of Class II signals.
- C. A "signal" indication and a "call" indication each for Class I and for Class II signals. The "signal" indication denotes that a signal above the threshold level has been received. A "call" indication denotes that a steady, validly coded signal has been received. These 2 indications may be accomplished with a single indication lamp; "signal" being denoted by a flashing indication and "call" with a steady indication.

In addition, the front panel shall be provided with a single circular, bayonet-captured, multi-pin connector for 2 auxiliary detector inputs for each channel. Connector shall be a mechanical configuration conforming to the requirements in Military Specification MIL-C-26482 with 10-4 insert arrangement, such as Burndy Trim Trio Bantamate Series, consisting of the following:

- A. Wall mounting receptacle, G0B10-4PNE with SM20M-1S6 gold plated pins.
- B. Plug, G6L10-4SNE with SC20M-1S6 gold plated sockets, cable clamp and strain relief that shall provide for a right angle turn within 65 mm maximum from the front panel surface of the discriminator module.

**Cabinet Wiring**

The Model 332 cabinet has provisions for connections between the optical detectors, the discriminator module and the Model 170 controller unit.

Wiring for a Model 332 cabinet shall conform to the following:

- A. Slots 12 and 13 of input file "J" have each been wired to accept a 2-channel module.
- B. Field wiring for the primary detectors, except 24-V (dc) power, shall terminate on either terminal board TB-9 in the controller cabinet or on the rear of input file "J," depending on cabinet configuration. Where TB-9 is used, position assignments shall be as follows:

Position	Assignment
4	Channel A detector input, 1st module (Slot J-12)
5	Channel B detector input, 1st module (Slot J-12)
7	Channel A detector input, 2nd module (Slot J-13)
8	Channel B detector input, 2nd module (Slot J-13)

The 24-V (dc) cabinet power will be available at Position 1 of terminal board TB-1 in the controller cabinet.

Field wiring for the auxiliary detectors shall terminate on terminal board TB-O in the controller cabinet. Position assignments are as follows:

FOR MODULE 1 (J-12)		FOR MODULE 2 (J-13)	
Position	Assignment	Position	Assignment
1	+24V (dc) from (J-12E)	7	+24V (dc) from (J-13E)
2	Detector ground From (J-12K)	8	Detector ground from (J-13K)
3	Channel A auxiliary detector input 1	9	Channel A auxiliary detector input 1
4	Channel A auxiliary detector input 2	10	Channel A auxiliary detector input 2
5	Channel B auxiliary detector input 1	11	Channel B auxiliary detector input 1
6	Channel B auxiliary detector input 2	12	Channel B auxiliary detector input 2

**SYSTEM OPERATION**

The Contractor shall demonstrate that the components of each system are compatible and will perform satisfactorily as a system. Satisfactory performance shall be determined using the following test procedure during the functional test period:

- A. Each system to be used for testing shall consist of an optical emitter assembly, an optical detector, an optical detector cable and a discriminator module.
- B. The discriminator modules shall be installed in the proper input file slot of the Model 170 controller assembly.
- C. Two tests shall be conducted; one using a Class I signal emitter and a distance of 300 m between the emitter and the detector, the other using a Class II signal emitter and a distance of 550 m between the emitter and the detector. Range adjustments on the module shall be set to "Maximum" for each test.
- D. Each test shall be conducted for a period of one hour, during which the emitter shall be operated for 30 cycles, each consisting of a one minute "on" interval and a one minute "off" interval. During the total test period the emitter signal shall cause the proper response from the Model 170 controller unit during each "on" interval and there shall be no improper operation of either the Model 170 controller unit or the monitor during each "off" interval.

**10-3.20 PEDESTRIAN PUSH BUTTONS**

All Pedestrian push buttons shall be metal and be fully ADA compliant and warranted by the manufacturer against sticking.

**10-3.21 LUMINAIRES**

Ballasts shall be the lag regulator type.

### **10-3.22 TRAFFIC MONITORING STATION**

Traffic monitoring station shall conform to the details shown on the plans and these special provisions.

Inductive loop detectors for traffic monitoring station and the installation thereof shall conform to the provisions in "Detectors" of these special provisions.

The exact location of the cabinet will be determined by the Engineer.

Sensor units shall be labeled in conformance with the provisions in Section 86-3.05A, "Labels," of the Standard Specifications.

### **10-3.23 SIGN LIGHTING FIXTURES-INDUCTION**

Induction sign lighting fixtures shall conform to the provisions for mercury sign lighting fixtures in Section 86-6.05, "Sign Lighting Fixtures-Mercury," of the Standard Specifications and these special provisions.

Each fixture shall consist of a housing with door, a reflector, refractor or a lens, a lamp, a power coupler, a high frequency generator and a fuse block.

Fixtures shall have a minimum average rating of 60 000 hours. Fixtures shall be for a wattage of , 85 W 120/240 V(ac). The power factor of the fixtures shall be greater than 90 percent and the total harmonic distortion shall be less than 10 percent. Fixtures shall be Underwriter's Laboratories (UL) approved for wet locations and be Federal Communications Commission (FCC) Class A listed.

The mass of the fixture shall not exceed 20 kg. The manufacturer's brand name, trademark, model number, serial number and date of manufacture shall be located on the packaged assembly and permanently marked on the outside and inside of the housing.

### **MATERIALS**

#### **Mounting Assembly**

The mounting assembly may be either cast aluminum, hot-dip galvanized steel plate or steel plate that has been galvanized and finished with a polymeric coating system or the same finish that is used for the housing.

#### **Housing**

Housings shall have a door designed to hold a refractor or lens. Housing doors shall be designed to be opened without the use of tools. Housings and doors shall have a powder coat or polyester paint finish of a gray color resembling unfinished fabricated aluminum.

#### **Reflector**

Reflectors shall be designed to be removed as a unit that includes the lamp and power coupler.

#### **Refractor**

Refractors or lenses shall have smooth exteriors. Lenses shall be flat or convex. Convex lenses shall be made from heat resistant, high-impact resistant, tempered glass.

Convex lenses shall be designed or shielded so that no fixture luminance is visible when the fixture is approached directly from the rear and the viewing level is the bottom of the fixture. When a shield is used it shall be an integral part of the door casting.

#### **Lamp**

Each fixture shall be furnished with a 85-W induction lamp. Interior lamp walls shall be fluorescent phosphor coated. Lamp light output shall be at least 70 percent at 60 000 hours. Lamps shall have a minimum color-rendering index of 80. Lamps shall be rated at a color temperature of 4000 K. Lamps shall be removable without the use of tools.

#### **Power Coupler**

Power couplers shall consist of a construction base with antenna, heat sink and electrical connection cable.

The power coupler shall be designed so that it can be removed with common hand tools.

### **High Frequency Generator**

High frequency generators shall start and operate lamps at an ambient temperature of -25 °C or greater for the rated life of the lamp.

Generator output frequency shall be 2.65 MHz ± 10 percent. The generator radio frequency interference shall meet the requirements of the Federal Communications Commission Title 47, Part 18, regulations concerning harmful interference.

High frequency generators shall operate continuously at ambient air temperatures from -25 °C to +25 °C without reduction in generator life. High frequency generators shall have a design life of at least 100 000 hours at 55 °C.

High frequency generators shall be capable of being replaced with common hand tools. Conductor terminals shall be identified as to the component terminal to which they connect.

High frequency generators shall be mounted to use the fixture upon which they are mounted as a heat sink.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications, and a copy of the high frequency generator test methods and results shall be submitted by the manufacturer with each lot of fixtures. The certificate shall state that the high frequency generators meet the requirements of this section and the generator specifications of the lamp manufacturer.

### **10-3.24 PHOTOELECTRIC CONTROLS**

Contactors shall be the mechanical armature type.

### **10-3.25 REMOVING, REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT**

Salvaged electrical materials shall be hauled to Caltrans District 3 corporate yard and stockpiled.

11325 Sanders Dr.  
Rancho Cordova, CA 995742

The Contractor shall provide the equipment, as necessary, to safely unload and stockpile the material. A minimum notice of 2 business days shall be given prior to delivery

All equipment shown on the plans as salvaged shall be tagged with a suitable waterproof tag and marking pen before removal from the work site. The tag shall show the date, and location from which the equipment was removed. The Contractor shall be responsible for unloading the equipment at the delivery location, including providing any necessary cranes or other lifting devices. All other equipment shown to be removed and not reused shall become the property of the Contractor and shall be removed from the right-of-way and disposed of by the Contractor.

### **10-3.26 PAYMENT**

The contract lump sum price or prices paid for Modify Signal and Lighting shall include highway lighting at intersections in connection with signals only.

Lighting along Missouri Flat Road shall be considered as included in the contract lump sum price paid for Lighting (County).

Other roadway lighting on the project shall be considered as included in the contract lump sum price paid for Modify Lighting and Sign Illumination.

Full compensation for hauling and stockpiling electrical materials shall be considered as included in the contract price paid for the item requiring the material to be salvaged and no additional compensation will be allowed therefor.

The contract lump sum price paid for traffic operations system shall include full compensation for furnishing all labor, materials (except items covered by other bid items), tools, equipment, and incidentals, and for doing all the work involved in installing ramp metering system, complete in place, including all the foundations poles, manuals and testing, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

If any of the fabrication sites for the materials listed are located more than 480 air line kilometers from both Sacramento and Los Angeles, additional shop inspection expenses will be sustained by the State. Whereas it is and will be impractical and difficult to determine the actual increase in these expenses, it is agreed that payment to the Contractor for furnishing these listed materials from each fabrication site located more than 480 air line kilometers from both Sacramento and Los Angeles will be reduced \$2000:

### 10-3.27 TRAFFIC SYSTEM TURN-ON PROCEDURES

Some of the following procedures may be performed prior to the final turn-on as long as ALL tests are observed and/or accepted by the responsible El Dorado County Inspector. All testing is the responsibility of the Contractor.

Unless otherwise noted, any changes to or modification of this standard turn-on procedure must be approved by the Engineer.

1. Check all signal lighting circuits. (Responsibility of Electrical Contractor. Inspector may request to be present at his discretion.)
  - a. Remove all load switches (model 200) and the flasher units (model 204). This must be done to assure their protection and to prevent feedback through the switch causing a possible misleading indication at the signals. The controller unit should be “off” during this test procedure.
  - b. Check each individual signal field circuit by applying 120 volts AC to the field terminal of each indication. This procedure is often called “flashing” the signal heads.
  - c. During “flashing” procedure, verify that all indications that should be “on” are “on” and that all indications that should be “off” remain “off”. This verification may be accomplished through the use of small holes cut in the signal face coverings. **Signals must remain covered during this operation unless the Contractor provides manual traffic control (flagging) and that control has been approved by the Inspector.**
2. Check luminaires (street lighting). (Responsibility of the Electrical Contractor. Inspector may request to be present at his discretion.)
  - a. Check power pedestal to assure that switch for luminaires is set to “AUTO”.
  - b. Cover the photoelectric cell and verify that all luminaires come on. (This test will take a few minutes.)
  - c. Remove cover from photoelectric cell verifying that luminaires go dark.
  - d. Set switch in power pedestal to the “TEST” position and verify that all luminaires come on. (This test will take a few minutes.)
  - e. Set switch back to “AUTO”. Signals may not be turned on unless all luminaires are functioning properly.
  - f. When all tests are complete, set switch to “TEST”. This condition should remain for at least two weeks to allow “burn in” of luminaires. This period may occur after the signals have been turned on.
3. Check all detector circuits. Although these tests are the responsibility of the Electrical Contractor, some do require the cooperation and participation of the El Dorado County Inspector and appropriate coordination should be arranged.
  - a. All detector loops are to be tested for continuity and resistance to ground. Resistance to ground shall exceed 100 meg ohms. County Inspector, at his discretion, should be present during these tests and observe results.
  - b. The functionality of all vehicle detection shall be demonstrated by use of a contractor provided test vehicle while cabinet indications and responses are observed by the County Inspector.
  - c. The Contractor shall demonstrate the functionality of the pedestrian push button circuits by activating the pedestrian push buttons while cabinet indications and responses are observed by the County Inspector.
4. Signs and pavement markings.
  - a. There must be a minimum of three (3) days of dry pavement prior to the application of any pavement markings.
  - b. Application of pavement markings should be coordinated so that the work is completed on Monday through Wednesday and at least five (5) business days prior to any County observed holiday.
  - c. All pavement markings and traffic control signs shall be in place the day prior to signal turn-on to accommodate coordination. Any signs associated with the signals shall be covered by the Contractor

and remain covered until final turn-on.

- d. Between the time the striping is complete and the signals are placed into operation, the Engineer in Responsible Charge or his designee may require the Contractor to install interim signing and/or safety measures to meet the safety needs of the community.
  - e. Inspector shall check ALL pavement markings to assure that they are in place and comply with the plans prior to notifying involved or interested parties and/or agencies of planned turn-on schedule. (Example of parties to be notified, as needed: Caltrans, DOT Traffic Unit, CHP, Sheriff, prime contractor, electrical contractor, engineer, etc.)
  - f. On the day of the turn-on, the Signal Operations Engineer or his designee shall have the responsibility of determining the exact time of the turn-on based on safety and operational considerations.
5. Final turn-on procedure. (Responsibility of the Signal Maintenance Contractor except as noted.)

**The signals MAY NOT be turned on unless all signs and markings are in place.**

**Final signal turn-on shall not occur during rainy or foggy weather, and shall not occur on Monday, Friday or within three (3) days prior to any holiday, unless otherwise specifically approved by the El Dorado County engineer in responsible charge.**

- a. Remove the conflict monitor and verify that it has been tested and that the correct and properly tested diode board is installed. This is accomplished by reviewing the accompanying MT-180 test printout strip and assuring that the program board is properly configured for the indicated intersection. The test strip should be signed or initialed by the responsible technician. The intersection may not be turned on without the presence of an MT-180 test strip.
- b. Check to verify that the timing plan provided by the Signal Operations Engineer has been properly entered into the Controller.
- c. Remove covers from signal heads. (Responsibility of Electrical Contractor.)
- d. Place signal into flashing operation.
- e. Remove all covers from signs. Also remove any interim signing or safety measures that may have been put in place. (This is the responsibility of the prime contractor.)
- f. Remove all existing STOP signs. (This is the responsibility of the prime contractor.)
- g. Place signals into automatic operation.
- h. Remove manual traffic control.
- i. Observe operations and make any adjustments to operations that are identified as necessary.

**SECTION 11. (BLANK)**

**SECTION 12. (BLANK)**

**SECTION 13. (BLANK)**

## SECTION 14. FEDERAL REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION PROJECTS

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**GENERAL.**—The work herein proposed will be financed in whole or in part with Federal funds, and therefore all of the statutes, rules and regulations promulgated by the Federal Government and applicable to work financed in whole or in part with Federal funds will apply to such work. The "Required Contract Provisions, Federal-Aid Construction Contracts, "Form FHWA 1273, are included in this Section 14. Whenever in said required contract provisions references are made to "SHA contracting officer", "SHA resident engineer", or "authorized representative of the SHA", such references shall be construed to mean "Engineer" as defined in Section 1-1.18 of the Standard Specifications.

**PERFORMANCE OF PREVIOUS CONTRACT.**—In addition to the provisions in Section II, "Nondiscrimination," and Section VII, "Subletting or Assigning the Contract," of the required contract provisions, the Contractor shall comply with the following:

The bidder shall execute the CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS located in the proposal. No request for subletting or assigning any portion of the contract in excess of \$10,000 will be considered under the provisions of Section VII of the required contract provisions unless such request is accompanied by the CERTIFICATION referred to above, executed by the proposed subcontractor.

**NON-COLLUSION PROVISION.**—The provisions in this section are applicable to all contracts except contracts for Federal Aid Secondary projects.

Title 23, United States Code, Section 112, requires as a condition precedent to approval by the Federal Highway Administrator of the contract for this work that each bidder file a sworn statement executed by, or on behalf of, the person, firm, association, or corporation to whom such contract is to be awarded, certifying that such person, firm, association, or corporation has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the submitted bid. A form to make the non-collusion affidavit statement required by Section 112 as a certification under penalty of perjury rather than as a sworn statement as permitted by 28, USC, Sec. 1746, is included in the proposal.

**PARTICIPATION BY MINORITY BUSINESS ENTERPRISES IN SUBCONTRACTING.**—Part 26, Title 49, Code of Federal Regulations applies to this Federal-aid project. Pertinent sections of said Code are incorporated in part or in its entirety within other sections of these special provisions.

Schedule B—Information for Determining Joint Venture Eligibility

(This form need not be filled in if all joint venture firms are minority owned.)

1. Name of joint venture \_\_\_\_\_  
\_\_\_\_\_

2. Address of joint venture \_\_\_\_\_  
\_\_\_\_\_

3. Phone number of joint venture \_\_\_\_\_  
\_\_\_\_\_

4. Identify the firms, which comprise the joint venture. (The MBE partner must complete Schedule A.) \_\_\_\_\_  
\_\_\_\_\_

a. Describe the role of the MBE firm in the joint venture. \_  
\_\_\_\_\_

b. Describe very briefly the experience and business qualifications of each non-MBE joint venturer: \_\_\_\_\_  
\_\_\_\_\_

5. Nature of the joint venture's business \_\_\_\_\_  
\_\_\_\_\_

6. Provide a copy of the joint venture agreement.

7. What is the claimed percentage of MBE ownership? \_\_\_\_\_  
\_\_\_\_\_

8. Ownership of joint venture: (This need not be filled in if described in the joint venture agreement, provided by question 6.).

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- a. Profit and loss sharing.
- b. Capital contributions, including equipment.
- c. Other applicable ownership interests.

9. Control of and participation in this contract. Identify by name, race, sex, and "firm" those individuals (and their titles) who are responsible for day-to-day management and policy decision-making, including, but not limited to, those with prime responsibility for:

a. Financial decisions \_\_\_\_\_  
\_\_\_\_\_

b. Management decisions, such as:

1. Estimating \_\_\_\_\_  
\_\_\_\_\_

2. Marketing and sales \_\_\_\_\_  
\_\_\_\_\_

3. Hiring and firing of management personnel \_\_\_\_\_  
\_\_\_\_\_

4. Purchasing of major items or supplies \_\_\_\_\_  
\_\_\_\_\_

c. Supervision of field operations \_\_\_\_\_  
\_\_\_\_\_

Note.—If, after filing this Schedule B and before the completion of the joint venture's work on the contract covered by this regulation, there is any significant change in the information submitted, the joint venture must inform the grantee, either directly or through the prime contractor if the joint venture is a subcontractor.

**Affidavit**

"The undersigned swear that the foregoing statements are correct and include all material information necessary to identify and explain the terms and operation of our joint venture and the intended participation by each joint venturer in the undertaking. Further, the undersigned covenant and agree to provide to grantee current, complete and accurate information regarding actual joint venture work and the payment therefore and any proposed changes in any of the joint venture arrangements and to permit the audit and examination of the books, records and files of the joint venture, or those of each joint venturer relevant to the joint venture, by authorized representatives of the grantee or the Federal funding agency. Any material misrepresentation will be grounds for terminating any contract which may be awarded and for initiating action under Federal or State laws concerning false statements."

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.....	.....
Name of Firm	Name of Firm
.....	.....
Signature	Signature
.....	.....
Name	Name
.....	.....
Title	Title
.....	.....
Date	Date

Date \_\_\_\_\_  
State of \_\_\_\_\_  
County of \_\_\_\_\_

On this \_\_\_ day of \_\_\_\_\_, 19 \_\_, before me appeared (Name) \_\_\_\_\_, to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) \_\_\_\_\_ to execute the affidavit and did so as his or her free act and deed.

Notary Public \_\_\_\_\_  
Commission expires \_\_\_\_\_

[Seal]  
Date \_\_\_\_\_  
State of \_\_\_\_\_  
County of \_\_\_\_\_

On this \_\_\_ day of \_\_\_\_\_, 19 \_\_, before me appeared (Name) \_\_\_\_\_ to me personally known, who, being duly sworn, did execute the foregoing affidavit, and did state that he or she was properly authorized by (Name of firm) \_\_\_\_\_ to execute the affidavit and did so as his or her free act and deed.

Notary Public \_\_\_\_\_  
Commission expires \_\_\_\_\_

[Seal]

**REQUIRED CONTRACT PROVISIONS  
FEDERAL-AID CONSTRUCTION CONTRACTS**

(Exclusive of Appalachian Contracts)

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(DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

**6. Selection of Labor:** During the performance of this contract, the contractor shall not:

a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

**II. NONDISCRIMINATION**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

**1. Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."

**2. EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively

**ATTACHMENTS**

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

**I. GENERAL**

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

- Section I, paragraph 2;
- Section IV, paragraphs 1, 2, 3, 4, and 7;
- Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor

administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

**3. Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

**4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

#### **6. Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

**8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 26, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

**9. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

### III NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

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c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

#### **IV. PAYMENT OF PREDETERMINED MINIMUM WAGE**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

##### **1. General:**

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3)] issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c) the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

##### **2. Classification:**

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

##### **3. Payment of Fringe Benefits:**

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit

as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

#### **4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

##### **a. Apprentices:**

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

##### **b. Trainees:**

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

##### **c. Helpers:**

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

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## **5. Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

## **6. Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

## **7. Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

## **8. Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

## **9. Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

## **V. STATEMENTS AND PAYROLLS**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

### **1. Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

### **2. Payrolls and Payroll Records:**

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such

records available may be grounds for debarment action pursuant to 29 CFR 5.12.

## **VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR**

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

## **VII. SUBLETTING OR ASSIGNING THE CONTRACT**

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

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2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products, which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

### **VIII. SAFETY: ACCIDENT PREVENTION**

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

### **IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding re-

garding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

### **NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS**

#### **18 U.S.C. 1020 reads as follows:**

"Whoever being an officer, agent, or employee of the United States, or any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both."

### **X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub. L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized

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for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

## **XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

### **1. Instructions for Certification - Primary Covered Transactions:**

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

\* \* \* \* \*

### **CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION—PRIMARY COVERED TRANSACTIONS**

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

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d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**2. Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\* \* \* \* \*

**CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION-LOWER TIER COVERED TRANSACTIONS**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract,

grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall

be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**FEDERAL-AID FEMALE AND MINORITY GOALS**

In accordance with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-aid Construction Contracts" the following are the goals for female utilization:

Goal for Women  
(applies nationwide).....(percent) ..... 6.9

The following are goals for minority utilization:

**CALIFORNIA ECONOMIC AREA**

.....Goal  
.....(Percent)

**174 Redding, CA:**

Non-SMSA Counties ..... 6.8  
CA Lassen; CA Modoc;  
CA Plumas; CA Shasta;  
CA Siskiyou; CA Tehama.

**175 Eureka, CA:**

Non-SMSA Counties ..... 6.6  
CA Del Norte; CA Humboldt;  
CA Trinity.

**176 San Francisco-Oakland-San Jose, CA:**

SMSA Counties:  
7120 Salinas-Seaside-  
Monterey, CA..... 28.9  
CA Monterey.  
7360 San Francisco-Oakland, CA. .... 25.6  
CA Alameda; CA Contra Costa;  
CA Marin; CA San Francisco;  
CA San Mateo.  
7400 San Jose, CA..... 19.6  
CA Santa Clara.  
7485 Santa Cruz, CA..... 14.9  
CA Santa Cruz.  
7500 Santa Rosa, CA..... 9.1  
CA Sonoma.  
8720 Vallejo-Fairfield- Napa, CA ..... 17.1  
CA Napa; CA Solano  
Non-SMSA Counties ..... 23.2  
CA Lake; CA Mendocino;  
CA San Benito.

**177 Sacramento, CA:**

SMSA Counties:  
6920 Sacramento, CA. .... 16.1  
CA Placer; CA Sacramento;  
CA Yolo.  
Non-SMSA Counties. .... 14.3  
CA Butte; CA Colusa;  
CA El Dorado; CA Glenn;  
CA Nevada; CA Sierra;  
CA Sutter; CA Yuba.

**178 Stockton-Modesto, CA:**

SMSA Counties:  
5170 Modesto, CA..... 12.3  
CA Stanislaus.  
8120 Stockton, CA..... 24.3  
CA San Joaquin.  
Non-SMSA Counties ..... 19.8  
CA Alpine; CA Amador;  
CA Calaveras; CA Mariposa;  
CA Merced; CA Tuolumne.

**179 Fresno-Bakersfield, CA:**

SMSA Counties:  
0680 Bakersfield, CA ..... 19.1  
CA Kern.  
2840 Fresno, CA..... 26.1  
CA Fresno.  
Non-SMSA Counties ..... 23.6  
CA Kings; CA Madera;  
CA Tulare.

**180 Los Angeles, CA:**

SMSA Counties:  
0360 Anaheim-Santa Ana-Garden  
Grove, CA. .... 11.9  
CA Orange.  
4480 Los Angeles-Long  
Beach, CA ..... 28.3  
CA Los Angeles.  
6000 Oxnard-Simi Valley-  
Ventura, CA..... 21.5  
CA Ventura.

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6780 Riverside-San Bernardino- Ontario, CA.....	19.0
CA Riverside; CA San Bernardino.	
7480 Santa Barbara-Santa Maria- Lompoc, CA.....	19.7
CA Santa Barbara.	
Non-SMSA Counties.....	24.6
CA Inyo; CA Mono; CA San Luis Obispo.	

**181 San Diego, CA:**

SMSA Counties	
7320 San Diego, CA.....	16.9
CA San Diego.	
Non-SMSA Counties .....	18.2
CA Imperial.	

In addition to the reporting requirements set forth elsewhere in this contract the Contractor and subcontractors holding subcontracts, not including material suppliers, of \$10,000 or more, shall submit for every month of July during which work is performed, employment data as contained under Form FHWA PR-1391 (Appendix C to 23 CFR, Part 230), and in accordance with the instructions included thereon.

## FEDERAL REQUIREMENT TRAINING SPECIAL PROVISIONS

**FEDERAL REQUIREMENT TRAINING SPECIAL PROVISION.** -- As part of the Contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The Contractor shall provide on-the-job training to develop full journeymen in the types of trades or job classification involved.

The goal for the number of trainees or apprentices to be trained under the requirements of this special provision will be 15.

In the event the Contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees or apprentices are to be trained by the subcontractor, provided however, that the Contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The Contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of trainees or apprentices in each occupation shall be in their first year of apprenticeship or training.

The number of trainees or apprentices shall be distributed among the work classifications on the basis of the Contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment. Prior to commencing work, the Contractor shall submit to the Department for approval the number of trainees or apprentices to be trained in each selected classification and training program to be used. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. The Contractor will be credited for each trainee or apprentice employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees or apprentices as provided hereinafter.

Training and upgrading of minorities and women toward journeymen status is a primary objective of this Training Special Provision. Accordingly, the Contractor shall make every effort to enroll minority and women trainees or apprentices (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees or apprentices) to the extent such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee or apprentice in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The Contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the Contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the Contractor and approved by both the Department and the Federal Highway Administration. The Department and the Federal Highway Administration will approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee or apprentice for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with the State of California, Department of Industrial Relations, Division of Apprenticeship Standards recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerical-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the division office. Some

offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training. Except as otherwise noted below, the Contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein.

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This reimbursement will be made even though the Contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the Contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the Contractor where he does one or more of the following and the trainees or apprentices are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or apprentice or pays the trainee's or apprentice's wages during the offsite training period.

No payment shall be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee or apprentice as a journeyman, is caused by the

Contractor and evidences a lack of good faith on the part of the Contractor in meeting the requirements of this Training Special Provision. It is normally expected that a trainee or apprentice will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training

program. It is not required that all trainees or apprentices be on board for the entire length of the contract. A Contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees or apprentices specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Only trainees or apprentices registered in a program approved by the State of California's State Administrator of Apprenticeship may be employed on the project and said trainees or apprentices shall be paid the standard wage specified under the regulations of the craft or trade at which they are employed.

The Contractor shall furnish the trainee or apprentice a copy of the program he will follow in providing the training. The Contractor shall provide each trainee or apprentice with a certification showing the type and length of training satisfactorily completed. The Contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision

**APPENDIX A - AMENDMENTS TO THE STANDARD SPECIFICATIONS  
DATED JULY 1999  
(Issued 09-05-08)**



**SECTION 0 GLOBAL REVISIONS**

**(Issued 07-01-08)**

Global revisions are changes to contract documents not specific to a section of the Standard Specifications.

In each contract document at each occurrence:

1. Except where existing asphalt concrete is described, replace "asphalt concrete" with "hot mix asphalt"
2. Except where existing AC is described, replace "AC" with "HMA" where AC means asphalt concrete
3. Replace "Engineer's Estimate" with "verified Bid Item List"
4. Replace "Notice to Contractors" with "Notice to Bidders"
5. Except in "Contract Project Information Signs," replace "Project Information" with "Supplemental Project Information"

Where Standard Specifications refer to the special provisions to describe the work, interpret the reference to the Bid Item List, the special provisions, or both.

Interpret a reference to the Standard Specifications as a reference to the Standard Specifications as amended in these Amendments to the Standard Specifications.

^^

**SECTION 1 DEFINITIONS AND TERMS**

**(Issued 07-01-08)**

**Replace Section 1 with:  
SECTION 1 GENERAL  
1-1 GENERAL**

**1-1.01 GENERAL**

Section 1 includes general rules of interpretation.

The Department is gradually standardizing the style and language of the specifications. The new style and language includes:

1. Use of:
  - 1.1. Imperative mood
  - 1.2. Introductory modifiers
  - 1.3. Conditional clauses
  
2. Elimination of:
  - 2.1. Language variations
  - 2.2. Definitions for industry-standard terms
  - 2.3. Redundant specifications
  - 2.4. Needless cross-references

The use of this new style does not change the meaning of a specification not yet using this style.

The specifications are written to the Bidder before award and the Contractor after. Before award, interpret sentences written in the imperative mood as starting with "The Bidder must" and interpret "you" as "the Bidder" and "your" as "the Bidder's." After award, interpret sentences written in the imperative mood as starting with "The Contractor must" and interpret "you" as "the Contractor" and "your" as "the Contractor's."

Unless an object or activity is specified to be less than the total, the quantity or amount is all of the object or activity.

All items in a list apply unless the items are specified as choices.

Headings are included for the purposes of organization and referencing. Inclusion of a heading with no related content, "Reserved," or "Not Used" does not indicate that no specification exists for that subject; applicable specifications may be covered in a general or referenced specification.

## 1-2 REFERENCES

### 1-2.01 REFERENCES

A reference within parentheses to a law or regulation is included in the contract for convenience only and is not a comprehensive listing of related laws and regulations. Lack of a reference does not indicate no related laws or regulations exist.

If the version of a referenced document is not specified, use the current version in effect on the date of Notice to Bidders.

A reference to a subsection includes the section's general specifications of which the subsection is a part.

A code not specified as a Federal code is a California code.

## 1-3 ABBREVIATIONS AND MEASUREMENT UNITS

### 1-3.01 ABBREVIATIONS

#### Abbreviations

Abbreviation	Meaning
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
APHA	American Public Health Association
API	American Petroleum Institute
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American Wire Gage
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
CIH	Certified Industrial Hygienist
DBE	Disadvantaged Business Enterprise
DVBE	Disabled Veteran Business Enterprise
EIA	Electronic Industries Alliance
ETL	Electrical Testing Laboratories
FHWA	Federal Highway Administration
IEEE	Institute of Electrical and Electronics Engineers
NETA	National Electrical Testing Association, Inc.
NEMA	National Electrical Manufacturers Association
PLAC	permit, license, agreement, certification, or any combination of these
SSPC	The Society for Protective Coatings
UL	Underwriters' Laboratories Inc.

### 1-3.02 MEASUREMENT UNITS

Some of the symbols for units of measurement used in the specifications and in the Bid Item List are defined as follows. The symbols for other units of measurement used in the specifications are as defined in ASTM E 380 or in the various specifications and test referenced in the specifications.

### Measurement Units

Symbols as used in the specifications	Symbols as used in the Bid Item List	Meaning
A	—	amperes
—	EA	each
g	G	gram
kg	KG	kilogram
ha	HA	hectare (10 000 m <sup>2</sup> )
h	H	hour
J	—	joule
—	LNKM	lane kilometer
L	L	liter
—	LS	lump sum
m	M	meter
km	KM	kilometer
mm	MM	millimeter
μm	—	micrometer
nm	—	nanometer
m <sup>2</sup>	M2	square meter
m <sup>3</sup>	M3	cubic meter
N	—	newton
N·m	—	newton meter
Ω	—	ohm
Pa	—	pascal
kPa	—	kilopascal
MPa	—	megapascal
s	—	second
—	STA	station (100 m)
—	TAB	tablet
tonne	TONN	metric ton (1000 kg)
W	—	watt

### 1-4 DEFINITIONS

#### 1-4.01 GENERAL

Interpret terms as defined in the contract documents. A construction-industry term not defined in the contract documents has the meaning defined in Means Illustrated Construction Dictionary, Condensed Version, Second Edition.

#### 1-4.02 GLOSSARY

**acceptance:** Formal written acceptance by the Director of an entire contract that has been completed in all respects in accordance with the plans and specifications and any modifications to them previously approved.

**base:** Layer of specified material of planned thickness placed immediately below the pavement or surfacing.

**basement material:** Material in excavation or embankments underlying the lowest layer of subbase, base, pavement, surfacing, or other specified layer to be placed.

**bid item:** Specific work unit for which the bidder provides a price.

**Bid Item List:** List of bid items and the associated quantities.

**Bid Item List, verified:** Bid Item List with verified prices. The Contract Proposal of Low Bidder at the Department's Web site is the verified Bid Item List.

**bridge:** Structure, with a bridge number, that carries a utility facility, or railroad, highway, pedestrian or other traffic, over a water course or over or under or around any obstruction.

**building-construction contract:** Contract that has "building construction" on the cover of the Notice to Bidders and Special Provisions.

**business day:** Day on the calendar except Saturday or holiday.

**California Manual on Uniform Traffic Control Devices:** The California Manual on Uniform Traffic Control Devices for Streets and Highways (California MUTCD) is issued by the Department of Transportation and is the Federal Highway Administration's MUTCD 2003 Edition, as amended for use in California.

**Certified Industrial Hygienist:** Industrial hygienist certified in comprehensive practice by the American Board of Industrial Hygiene.

**conduit:** Pipe or tube in which smaller pipes, tubes, or electrical conductors are inserted or are to be inserted.

**contract:** Written and executed contract between the Department and the Contractor.

**contract bonds:** Security for the payment of workers and suppliers furnishing materials, labor, and services and for guaranteeing the Contractor's work performance.

**contract item:** Bid item.

**Contractor:** Person or business or its legal representative entering into a contract with the Department for performance of the work.

**culvert:** Structure, other than a bridge, that provides an opening under a roadway for drainage or other purposes.

**day:** 24 consecutive hours running from midnight to midnight; calendar day.

**deduction:** Amount of money permanently taken from progress payment and final payment. Deductions are not retentions under Pub Cont Code § 7107.

**Department:** Department of Transportation as defined in St & Hwy Code § 20 and authorized in St & Hwy Code § 90; its authorized representatives.

**detour:** Temporary route for traffic around a closed road part. A passageway through a job site is not a detour.

**Director:** Department's Director.

**Disabled Veteran Business Enterprise:** Business certified as a DVBE by the Office of Small Business and DVBE Services, Department of General Services.

**divided highway:** Highway with separated traveled ways for traffic, generally in opposite directions.

**Engineer:** Department's Chief Engineer acting either directly or through properly authorized agents; the agents acting within the scope of the particular duties delegated to them.

**Federal-aid contract:** Contract that has a Federal-aid project number on the cover of the Notice to Bidders and Special Provisions.

**fixed costs:** Labor, material, or equipment cost directly incurred by the Contractor as a result of performing or supplying a particular bid item that remains constant regardless of the item's quantity.

**frontage road:** Local street or road auxiliary to and located generally on the side of an arterial highway for service to abutting property and adjacent areas and for control of access.

**grading plane:** Basement material surface on which the lowest layer of subbase, base, pavement, surfacing, or other specified layer is placed.

**highway:** Whole right of way or area that is reserved for and secured for use in constructing the roadway and its appurtenances.

**holiday:**

1. Every Sunday
2. January 1st, New Year's Day
3. 3rd Monday in January, Birthday of Martin Luther King, Jr.
4. February 12th, Lincoln's Birthday
5. 3rd Monday in February, Washington's Birthday
6. March 31st, Cesar Chavez Day
7. Last Monday in May, Memorial Day
8. July 4th, Independence Day
9. 1st Monday in September, Labor Day
10. 2nd Monday in October, Columbus Day
11. November 11th, Veterans Day
12. 4th Thursday in November, Thanksgiving Day
13. Day after Thanksgiving Day
14. December 25th, Christmas Day

If January 1st, February 12th, March 31st, July 4th, November 11th, or December 25th falls on a Sunday, the Monday following is a holiday. If November 11th falls on a Saturday, the preceding Friday is a holiday. Interpret "legal holiday" as "holiday."

**informal-bid contract:** Contract that has "Informal Bid Authorized by Pub Cont Code §10122" on the cover of the Notice to Bidders and Special Provisions.

**Information Handout:** Supplemental project information furnished to bidders as a handout.

**laboratory:** Laboratory authorized by the Department to test materials.

**liquidated damages:** Amount prescribed in the specifications, pursuant to the authority of Pub Cont Code § 10226, to be paid to the State or to be deducted for each day's delay in completing the whole or any specified portion of the work beyond the time allowed in the specifications.

**median:** Portion of a divided highway separating the traveled ways for traffic in opposite directions including inside shoulders.

**Notice to Bidders:** Document that provides a general work description, bidder and bid specifications, and the time and location the Department receives bids.

**pavement:** Uppermost layer of material placed on the traveled way or shoulders. This term is used interchangeably with surfacing.

**plans:** Official project plans and Standard Plans, profiles, typical cross sections, working drawings and supplemental drawings, or reproductions thereof, approved by the Engineer, which show the location, character, dimensions and details of the work to be performed. These documents are to be considered as a part of the plans.

In the above definition, the following terms are defined as follows:

**Standard Plans:** Standard Plans issued by the Department.

**project plans:** Specific details and dimensions peculiar to the work supplemented by the Standard Plans insofar as the same may apply.

**roadbed:** Area between the intersection of the upper surface of the roadway and the side slopes or curb lines. The roadbed rises in elevation as each increment or layer of subbase, base, surfacing or pavement is placed. Where the medians are so wide as to include areas of undisturbed land, a divided highway is considered as including 2 separate roadbeds.

**roadway:** Highway portion included between the outside lines of sidewalks, or curbs, slopes, ditches, channels, waterways, and including all the appertaining structures, and other features necessary to proper drainage and protection.

**shoulder:** Roadway portion contiguous with the traveled way for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.

**special provisions:** Specific clauses setting forth conditions or requirements peculiar to the work and supplementary to these Standard Specifications. The Department's publication titled "Labor Surcharge And Equipment Rental Rates" is part of the special provisions.

**specifications:** Directions, provisions, and requirements contained in these Standard Specifications, Amendments to the Standard Specifications, and the special provisions. Where the term "these specifications" or "these Standard Specifications" is used in this book, it means the provisions set forth in this book.

**State:** State of California, including its agencies, departments, or divisions, whose conduct or action is related to the work.

**Structure Design:** Offices of Structure Design of the Department.

**subbase:** Layer of specified material of planned thickness between a base and the basement material.

**subgrade:** Roadbed portion on which pavement, surfacing, base, subbase, or a layer of any other material is placed.

**substructure:** Bridge portions below the bridge seats, tops of piers, haunches of rigid frames, or below the spring lines of arches. Backwalls and parapets of abutments and wingwalls of bridges are portions of the substructure.

**superstructure:** Bridge portion except the bridge substructure.

**supplemental project information:** Information relevant to the project, specified as supplemental project information, and made available to bidders.

**surfacing:** Uppermost layer of material placed on the traveled way, or shoulders. This term is used interchangeably with pavement.

**traffic lane:** Portion of a traveled way for the movement of a single line of vehicles.

**traveled way:** Portion of the roadway for the movement of vehicles, exclusive of shoulders.

**total bid:** Sum of the item totals as verified by the Department; original contract price.

**withhold:** Money temporarily or permanently taken from progress payment. Withholds are not retentions under Pub Cont Code § 7107.

**work:** All the work specified, indicated, shown or contemplated in the contract to construct the improvement, including all alterations, amendments, or extensions to it made by contract change order or other written orders of the Engineer.

## 1-5 DISTRICTS

### District Composition and Office Addresses

District	Counties	Location Address	Mailing Address
1	Del Norte (DN), Humboldt (Hum), Lake (Lak), Mendocino (Men)	1656 UNION ST EUREKA, CA	PO BOX 3700 EUREKA CA 95502
2	Lassen (Las), Modoc (Mod), Plumas (Plu), Shasta (Sha), Siskiyou (Sis), Tehama (Teh), Trinity (Tri)	1657 RIVERSIDE DR REDDING, CA	PO BOX 496073 REDDING CA 96049-6073
3	Butte (But), Colusa (Col), El Dorado (ED), Glenn (Gle), Nevada (Nev), Placer (Pla), Sacramento (Sac), Sierra (Sie), Sutter (Sut), Yolo (Yol), Yuba (Yub)	703 B ST MARYSVILLE, CA	PO BOX 911 MARYSVILLE CA 95901
4	Alameda (Ala), Contra Costa (CC), Marin (Mrn), Napa (Nap), San Francisco (SF), San Mateo (SM), Santa Clara (SCL), Solano (Sol), Sonoma (Son)	111 GRAND AVE OAKLAND, CA	PO BOX 23660 OAKLAND CA 94623-0660
5	Monterey (Mon), San Benito (SBt), San Luis Obispo (SLO), Santa Barbara (SB), Santa Cruz (SCr)	50 HIGUERA ST SAN LUIS OBISPO, CA	50 HIGUERA ST SAN LUIS OBISPO CA 93401-5415
6	Fresno (Fre), Kern (Ker), Kings (Kin), Madera (Mad), Tulare (Tul)	1352 W. OLIVE AVE FRESNO, CA	PO BOX 12616 FRESNO CA 93728-2616
7	Los Angeles (LA), Ventura (Ven)	100 S. MAIN ST LOS ANGELES	100 S MAIN ST LOS ANGELES CA 90012
8	Riverside (Riv), San Bernardino (SBd)	464 W 4TH ST SAN BERNARDINO, CA	464 W 4TH ST SAN BERNARDINO CA 92401-1400
9	Inyo (Iny), Mono (Mno)	500 S MAIN ST BISHOP, CA	500 S MAIN ST BISHOP CA 93514-3423
10	Alpine (Alp), Amador (Ama), Calaveras (Cal), Mariposa (Mpa), Merced (Mer), San Joaquin (SJ), Stanislaus (Sta), Tuolumne (Tuo)	1976 E CHARTER WAY STOCKTON, CA	PO BOX 2048 STOCKTON CA 95201
11	Imperial (Imp), San Diego (SD)	4050 TAYLOR ST SAN DIEGO, CA	4050 TAYLOR ST SAN DIEGO CA 92110-2737
12	Orange (Ora)	3347 MICHELSON DR STE 100 IRVINE, CA	3347 MICHELSON DR STE 100 IRVINE CA 92612-0661

A project with work in District 1, 2, or 3 is a North Region project. For Districts 1, 2, and 3, interpret each reference to the district office as the North Region office. The North Region office address is the District 3 address.

## 1-6 WEB SITES, ADDRESSES, AND TELEPHONE NUMBERS

**Web Sites, Addresses, and Telephone Numbers**

Agency, Department Unit, or Reference	Web Site	Address	Telephone No.
Bid Document Unit		MSC 26 BID DOCUMENT UNIT DEPARTMENT OF TRANSPORTATION 1120 N ST RM 200 SACRAMENTO CA 95814-5605	
Department	<a href="http://www.dot.ca.gov">www.dot.ca.gov</a>		
Department of General Services, Office of Small Business and DVBE Services	<a href="http://www.pd.dgs.ca.gov/smbus/default.htm">www.pd.dgs.ca.gov/smbus/default.htm</a>	OFFICE OF SMALL BUSINESS AND DVBE SERVICES DEPARTMENT OF GENERAL SERVICES 707 3RD ST WEST SACRAMENTO CA 95605-2811	(800) 559-5529 (916) 375-4940
Department of Industrial Relations	<a href="http://www.dir.ca.gov">www.dir.ca.gov</a>		
Department of Industrial Relations, Division of Apprenticeship Standards		455 GOLDEN GATE AVENUE SAN FRANCISCO, CA 94102	
Office Engineer		MSC 43 OFFICE ENGINEER DEPARTMENT OF TRANSPORTATION 1727 30TH ST SACRAMENTO CA 95816-7005	
Office Engineer– Verified Bid Results	<a href="http://www.dot.ca.gov/hq/esc/oe/awards/bids um_html/6week_list.html">http://www.dot.ca.gov/hq/esc/oe/awards/bids um_html/6week_list.html</a>		
Offices of Structure Design, Documents Unit		MSC 9-4/4I DOCUMENTS UNIT OFFICES OF STRUCTURE DESIGN DEPARTMENT OF TRANSPORTATION 1801 30TH ST SACRAMENTO CA 95816-7006	(916) 227-8252
Publication Distribution Unit		PUBLICATION UNIT DEPARTMENT OF TRANSPORTATION 1900 ROYAL OAKS DRIVE SACRAMENTO CA 95815-3800	
Transportation Laboratory		MATERIALS AND ENGINEERING TESTING SERVICES AND GEOTECHNICAL SERVICES DEPARTMENT OF TRANSPORTATION 5900 FOLSOM BLVD SACRAMENTO CA 95819-4612	(916) 227-7000
Department's Pre- Qualified Products List	<a href="http://www.dot.ca.gov/hq/esc/approved_products_list">http://www.dot.ca.gov/hq/esc/approved_products_list</a>		





- Determine the estimates under Section 9-1.03, "Force Account Payment."
4. Deadline for the Engineer to decide on the changes.
  5. Bid items affected and resulting quantity changes.

The Department is not required to consider a VECP. If a VECP is similar to a change in the plans or specifications being considered by the Department at the time the proposal is submitted or if the proposal is based on or similar to drawings or specifications adopted by the Department before Contract award, the Department does not accept the VECP and may make these changes without VECP payments.

Until the Department approves a change order incorporating the VECP or parts of it, continue to perform the work under the contract. If the Department does not approve a change order before the deadline stated in the VECP or other date you subsequently stated in writing, the VECP is rejected. The Department does not adjust time or payment for a rejected VECP.

The Department decides whether to accept a VECP and the estimated net construction-cost savings from adopting the VECP or parts of it.

The Department may require you to accept a share of the investigation cost as a condition of reviewing a VECP. After written acceptance, the Department considers the VECP and deducts the agreed cost.

If the Department accepts the VECP or parts of it, the Department issues a change order that:

1. Incorporates changes in the contract necessary to implement the VECP or the parts adopted
2. Includes the Department's acceptance conditions
3. States the estimated net construction-cost savings resulting from the VECP
4. Obligates the Department to pay you 50 percent of the estimated net savings

In determining the estimated net construction-cost savings, the Department excludes your VECP preparation cost and the Department's VECP investigation cost, including parts paid by you.

If a VECP providing for a reduction in working days is accepted by the Department, 50 percent of the reduction is deducted from contract time.

If a VECP providing for a reduction in traffic congestion or avoiding traffic congestion is accepted by the Department, the Department pays 60 percent of the estimated net savings in construction costs attributable to the VECP. Submit detailed traffic handling comparisons between the existing contract and the proposed change, including estimates of the traffic volumes and congestion.

The Department may apply an accepted VECP for general use on other contracts.

If an accepted VECP is adopted for general use, the Department pays only the contractor who first submitted the VECP and only to the contracts awarded to that contractor before the submission of the accepted VECP.

If the Department does not adopt a general-use VECP, an identical or similar submitted proposal is eligible for acceptance.

#### **4-1.035C Value Analysis Workshop**

Section 4-1.035C, "Value Analysis Workshop," applies to a non-building-work contract with a total bid of over \$5 million.

You may request a value analysis workshop by submitting a request after contract approval.

The Department offers a value analysis workshop to:

1. Identify value enhancing opportunities
2. Consider changes to the contract that will reduce the total cost of construction, construction activity duration, or traffic congestion without impairing the essential functions specified for a VECP in Section 4-1.035B, "Value Engineering Change Proposal."

If the request is authorized, you and the Engineer:

1. Schedule a value analysis workshop
2. Select a facilitator and workshop site
3. Agree to other workshop administrative details

The workshop must be conducted under the methods described in the Department's Value Analysis Team Guide available at:



For a project with a total bid greater than \$1 million, professionally facilitated project partnering is encouraged. For a project with a total bid greater than \$10 million, professionally facilitated project partnering is required. In implementing project partnering, you and the Engineer manage the contract by:

1. Using early and regular communication with involved parties
2. Establishing and maintaining a relationship of shared trust, equity, and commitment
3. Identifying, quantifying, and supporting attainment of mutual goals
4. Developing strategies for using risk management concepts
5. Implementing timely communication and decision making
6. Resolving potential problems at the lowest possible level to avoid negative impacts
7. Holding periodic partnering meetings and workshops as appropriate to maintain partnering relationships and benefits throughout the life of the project
8. Establishing periodic joint evaluations of the partnering process and attainment of mutual goals

Partnering does not void any contract part.

The Department's "Field Guide to Partnering on Caltrans Construction Projects" current at the time of bid is available to the project team as reference. This guide provides structure, context, and clarity to the partnering process requirements. This guide is available at the Department's Partnering Program website:

<http://www.dot.ca.gov/hq/construc/partnering.html>

In implementing project partnering, the project team must:

1. Create a partnering charter that includes:
  - 1.1. Mutual goals, including core project goals and may also include project-specific goals and mutually supported individual goals.
  - 1.2. Partnering maintenance and close-out plan.
  - 1.3. Dispute resolution plan that includes a dispute resolution ladder and may also include use of facilitated dispute resolution sessions.
  - 1.4. Team commitment statement and signatures.
2. Participate in monthly partnering evaluation surveys to measure progress on mutual goals and may also measure short-term key issues as they arise.
3. Evaluate the partnering facilitator on Forms CEM-5501 and CEM-5502. The Engineer provides the evaluation forms to the project team and collects the results. The Department makes evaluation results available upon request. Facilitator evaluations must be completed:
  - 3.1. At the end of the initial partnering workshop on Form CEM-5501.
  - 3.2. At the end of the project close-out partnering workshop on Form CEM-5502.
4. Conduct a project close-out partnering workshop.
5. Document lessons learned before contract acceptance.

#### **5-1.012B Partnering Facilitator, Workshops, and Monthly Evaluation Surveys**

The Engineer sends you a written invitation to enter into a partnering relationship after contract approval. Respond within 15 days to accept the invitation and request the initial and additional partnering workshops. After the Engineer receives the request, you and the Engineer cooperatively:

1. Select a partnering facilitator that offers the service of a monthly partnering evaluation survey with a 5-point rating and agrees to follow the Department's "Partnering Facilitator Standards and Expectations" available at the Department's Partnering Program website
2. Schedule initial partnering workshop
3. Determine initial workshop site and duration
4. Agree to other workshop administrative details

Additional partnering workshops and sessions are encouraged throughout the life of the project as determined necessary by you and the Engineer, recommended quarterly.

#### **5-1.012C Training in Partnering Skills Development**

For a project with a total bid of \$25 million or greater, training in partnering skills development is required.

For a project with a total bid between \$10 million and \$25 million, training in partnering skills is optional.

You and the Engineer cooperatively schedule the training session and select a professional trainer, training site, and 1 to 4 topics from the following list to be covered in the training:

1. Active Listening
2. Building Teams
3. Change Management
4. Communication
5. Conflict Resolution
6. Cultural Diversity
7. Dealing with Difficult People
8. Decision Making
9. Effective Escalation Ladders
10. Emotional Intelligence
11. Empathy
12. Ethics
13. Facilitation Skills
14. Leadership
15. Partnering Process and Concepts
16. Project Management
17. Project Organization
18. Problem Solving
19. Running Effective Meetings
20. Time Management
21. Win-Win Negotiation

Before the initial partnering workshop, the trainer conducts a 1-day training session in partnering skills development for the Contractor's and the Engineer's representatives. This training session must be a separate session from the initial partnering workshop and must be conducted locally. The training session must be consistent with the partnering principles under the Department's "Field Guide to Partnering on Caltrans Construction Projects."

Send at least 2 representatives to the training session. One of these must be your assigned representative as specified in Section 5-1.06, "Superintendence," of the Standard Specifications.

#### **5-1.012D Payment**

The Department pays you for:

1. 1/2 of partnering workshops and sessions based on facilitator and workshop site cost
2. 1/2 of monthly partnering evaluation survey service cost
3. Partnering skills development trainer and training site cost

The Department determines the costs based on invoice prices minus any available or offered discounts. The Department does not pay markups on these costs.

The Department does not pay for wages, travel expenses, or other costs associated with the partnering workshops and sessions, monthly partnering evaluation surveys, and training in partnering skills development.

**Add:**

**5-1.015 RECORDS**

**5-1.015A General**

Reserved

**5-1.015B Record Retention**

Retain project records from bid preparation through:

1. Final payment
2. Resolution of claims, if any

For at least 3 years after the later of these, retain cost records, including records of:

1. Bid preparation
2. Overhead
3. Payrolls
4. Payments to suppliers and subcontractors
5. Cost accounting

Maintain the records in an organized way in the original format, electronic and hard copy, conducive to professional review and audit.

**5-1.015C Record Inspection, Copying, and Auditing**

Make your records available for inspection, copying, and auditing by State representatives for the same time frame specified under Section 5-1.015B, "Record Retention." The records of subcontractors and suppliers must be made available for inspection, copying, and auditing by State representatives for the same period. Before contract acceptance, the State representative notifies the Contractor, subcontractor, or supplier 5 business days before inspection, copying, or auditing.

If an audit is to start more than 30 days after contract acceptance, the State representative notifies the Contractor, subcontractor, or supplier when the audit is to start.

**5-1.015D Cost Accounting Records**

Maintain cost accounting records for the project distinguishing between the following work cost categories:

1. Contract item work
2. Work character changes
3. Force account work
4. Extra work
5. Work performed under protests and claim notifications
6. Overhead
7. Subcontractors, suppliers, owner-operators, and professional services

Cost accounting records must include:

1. Final cost code lists and definitions
2. Itemization of the materials used and corresponding vendor's invoice copies
3. Direct cost of labor
4. Equipment rental charges
5. Workers' certified payrolls
6. Equipment:
  - 6.1. Size
  - 6.2. Type
  - 6.3. Identification number
  - 6.4. Hours operated

**5-1.015E Extra Work Bills**

Maintain separate records for force account costs.

Submit extra work bills using the Department's Internet extra work billing system.

The Contractor submitting and the Engineer approving an extra work bill using the Internet force account work billing system is the same as each party signing the report.

The Department provides billing system:

- 1. Training within 30 days of your written request
- 2. Accounts and user identification to your assigned representatives after a representative has received training

Each representative must maintain a unique password.

**Replace Section 5-1.02A with:**

**5-1.02A Excavation Safety Plans**

The Construction Safety Orders of the Division of Occupational Safety and Health shall apply to all excavations. For all excavations 1.5 m or more in depth, the Contractor shall submit to the Engineer a detailed plan showing the design and details of the protective systems to be provided for worker protection from the hazard of caving ground during excavation. The detailed plan shall include any tabulated data and any design calculations used in the preparation of the plan. Excavation shall not begin until the detailed plan has been reviewed and approved by the Engineer.

Detailed plans of protective systems for which the Construction Safety Orders require design by a registered professional engineer shall be prepared and signed by an engineer who is registered as a Civil Engineer in the State of California, and shall include the soil classification, soil properties, soil design calculations that demonstrate adequate stability of the protective system, and any other design calculations used in the preparation of the plan.

No plan shall allow the use of a protective system less effective than that required by the Construction Safety Orders.

If the detailed plan includes designs of protective systems developed only from the allowable configurations and slopes, or Appendices, contained in the Construction Safety Orders, the plan shall be submitted at least 5 days before the Contractor intends to begin excavation. If the detailed plan includes designs of protective systems developed from tabulated data, or designs for which design by a registered professional engineer is required, the plan shall be submitted at least 3 weeks before the Contractor intends to begin excavation.

Attention is directed to Section 7-1.01E, "Trench Safety."

**Replace Section 5-1.04 with:**

**5-1.04 CONTRACT COMPONENTS**

A component in one contract part applies as if appearing in each. The parts are complementary and describe and provide for a complete work.

If a discrepancy exists:

- 1. The governing ranking of contract parts in descending order is:
  - 1.1. Special provisions
  - 1.2. Project plans
  - 1.3. Revised Standard Plans
  - 1.4. Standard Plans
  - 1.5. Amendments to the Standard Specifications
  - 1.6. Standard Specifications
  - 1.7. Supplemental project information
- 2. Written numbers and notes on a drawing govern over graphics
- 3. A detail drawing governs over a general drawing

4. A detail specification governs over a general specification
5. A specification in a section governs over a specification referenced by that section

If a discrepancy is found or confusion arises, request correction or clarification.

**Add:**

**5-1.055 SUBCONTRACTING**

**5-1.055A General**

No subcontract releases you from the contract or relieves you of your responsibility for a subcontractor's work.

If you violate Pub Cont Code § 4100 et seq., the Department may exercise the remedies provided under Pub Cont Code § 4110. The Department may refer the violation to the Contractors State License Board as provided under Pub Cont Code § 4111.

Perform work equaling at least 30 percent of the value of the original total bid with your employees and with equipment owned or rented by you, with or without operators.

Each subcontract must comply with the contract.

Each subcontractor must have an active and valid State contractor's license with a classification appropriate for the work to be performed (Bus & Prof Code, § 7000 et seq.).

Submit copies of subcontracts upon request.

Before subcontracted work starts, submit a Subcontracting Request form.

Do not use a debarred contractor; a current list of debarred contractors is available at the Department of Industrial Relations' Web site.

Upon request, immediately remove and not again use a subcontractor who fails to prosecute the work satisfactorily.

**5-1.055B Disadvantaged Business Enterprises**

Section 5-1.055B, "Disadvantaged Business Enterprises," applies to a Federal-aid contract.

Use each subcontractor as listed on the Subcontractor List form unless you receive authorization for a substitution.

The Department requests the Contractor to:

1. Notify the Engineer of any changes to its anticipated DBE participation
2. Provide this notification before starting the affected work

Maintain records including:

1. Name and business address of each 1st-tier subcontractor
2. Name and business address of each DBE subcontractor, DBE vendor, and DBE trucking company, regardless of tier
3. Date of payment and total amount paid to each business

If you are a DBE contractor, include the date of work performed by your own forces and the corresponding value of the work.

Before the 15th of each month, submit a Monthly DBE Trucking Verification form.

For a DBE that leases trucks from a non-DBE, count only the fee or commission the DBE receives as a result of the lease arrangement.

If a DBE subcontractor is decertified before completing subcontracted work, the subcontractor must notify you in writing of the decertification date. If a subcontractor becomes a certified DBE before completing subcontracted work, the subcontractor must notify you in writing of the certification date. Submit the notifications. On contract work completion, complete a Disadvantaged Business Enterprises (DBE) Certification Status Change form. Submit the form within 90 days of contract acceptance.

Upon contract work completion, complete a Final Report – Utilization of Disadvantaged Business Enterprises (DBE), First-Tier Subcontractors form. Submit it within 90 days of contract acceptance. The Department withholds \$10,000 until the form is submitted. The Department releases the withhold upon submission of the completed form.

**5-1.055C Disabled Veteran Business Enterprises**

Section 5-1.055C, "Disabled Veteran Business Enterprises," applies to a non-Federal-aid contract.

If a DVBE goal is shown in the Notice to Bidders:

1. Use each DVBE as shown on the Certified DVBE Summary form unless you receive authorization for a substitution
2. The requirement that DVBEs be certified by the bid opening date does not apply to DVBE substitutions after contract award
3. Maintain records of subcontracts made with certified DVBEs. Include in the records:
  - 3.1. Name and business address of each business
  - 3.2. Total amount paid to each business
4. For the purpose of determining compliance with Pub Cont Code § 10115 et seq.:
  - 4.1. Provide the Department relevant information requested
  - 4.2. Upon reasonable notice and during normal business hours, permit access to its premises for the purpose of:
    - 4.2.1. Interviewing employees
    - 4.2.2. Inspecting and copying books, records, accounts and other material that may be relevant to a matter under investigation

If no DVBE goal is shown in the Notice to Bidders and if you obtain DVBE participation, submit the participating DVBE names and value of work or supplies supplied by each DVBE transaction upon contract completion.

**5-1.055D Non-Small Businesses**

Section 5-1.055D, "Non-Small Businesses," applies to a non-Federal-aid contract.

Use each subcontractor as shown on the Certified Small Business Listing for the Non-Small Business Preference form unless you receive authorization for a substitution.

The requirement that small businesses be certified by the bid opening date does not apply to small business substitutions after contract award.

Maintain records of subcontracts made with certified small business subcontractors and records of materials purchased from certified small business suppliers. Include in the records:

1. Name and business address of each business
2. Total amount paid to each business

For the purpose of determining compliance with 2 CA Code of Regs § 1896 et seq.:

1. Provide the Department relevant information requested.
2. Upon reasonable notice and during normal business hours, permit access to its premises for the purpose of:
  - 2.1. Interviewing employees
  - 2.2. Inspecting and copying books, records, accounts and other material that may be relevant to a matter under investigation

**Replace Section 5-1.07 with:**

**5-1.07 LINES AND GRADES**

The Engineer places stakes and marks under Chapter 12, "Construction Surveys," of the Department's Surveys Manual.

Submit your request for Department-furnished stakes:

1. On a Request for Construction Stakes form. Ensure:



- 1.1. Requested staking area is ready for stakes
  - 1.2. You use the stakes in a reasonable time
2. A reasonable time before starting an activity using the stakes

Establish priorities for stakes and note priorities on the request.  
Preserve stakes and marks placed by the Engineer. If the stakes or marks are destroyed, the Engineer replaces them at the Engineer's earliest convenience and deducts the cost.

**Replace Section 5-1.116 with:**

**5-1.116 DIFFERING SITE CONDITIONS (23 CFR 635.109)**

**5-1.116A Contractor's Notification**

Promptly notify the Engineer if you find either of the following:

1. Physical conditions differing materially from either of the following:
  - 1.1. Contract documents
  - 1.2. Job site examination
2. Physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract

Include details explaining the information you relied on and the material differences you discovered.  
If you fail to notify the Engineer promptly, you waive the differing site condition claim for the period between your discovery of the differing site condition and your notification to the Engineer.

If you disturb the site after discovery and before the Engineer's investigation, you waive the differing site condition claim.

**5-1.116B Engineer's Investigation and Decision**

Upon your notification, the Engineer investigates job site conditions and:

1. Notifies you whether to resume affected work
2. Decides whether the condition differs materially and is cause for an adjustment of time, payment, or both

**5-1.116C Protests**

You may protest the Engineer's decision by:

1. Submitting an Initial Notice of Potential Claim within 5 business days after receipt of the Engineer's notification
2. Complying with claim procedures

The Initial Notice of Potential Claim must detail the differences in your position from the Engineer's determination and support your position with additional information, including additional geotechnical data. Attach to the Initial Notice of Potential Claim a certification stating that you complied with Section 2-1.11, "Job Site and Document Examination."

Promptly submit supplementary information when obtained.

**Replace Section 5-1.14 with:**

**5-1.14 COST REDUCTION INCENTIVE**

Comply with Section 4-1.035B, "Value Engineering Change Proposal."

**Add:**

## **5-1.15 DISPUTE RESOLUTION**

### **5-1.15A General**

Section 5-1.15, "Dispute Resolution," applies to a contract with 100 or more working days.

In the Dispute Resolution Advisor Agreement and in the Dispute Review Board Agreement, interpret a reference to the special provisions as a reference to the Amendments to the Standard Specifications. In the Dispute Review Board Agreement, replace "Proposal and Contract" with "Bid book." Where the section title does not match the section number for a reference, refer to the referenced title.

### **5-1.15B Dispute Resolution Advisor**

Section 5-1.15B, "Dispute Resolution Advisor," applies to a contract from \$3 million to \$10 million.

A dispute resolution advisor, hereinafter referred to as "DRA", is chosen by the Department and the Contractor to assist in the resolution of disputes. The DRA is a part of the contract administrative claims process as specified in the provisions in Section 9-1.04, "Notice of Potential Claim," and Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications. The DRA shall not serve as a substitute for filing a protest or a notice of potential claim.

The DRA shall be established by the Department and the Contractor within 30 days of contract approval.

The Department and the Contractor shall each propose 3 potential DRA candidates. Each potential candidate shall provide the Department and the Contractor with their disclosure statement. The disclosure statement shall include a resume of the potential candidate's experience and a declaration statement describing past, present, anticipated, and planned relationships with all parties involved in this contract.

The Department and the Contractor shall select one of the 6 nominees to be the DRA. If the Department and the Contractor cannot agree on one candidate, the Department and the Contractor shall each choose one of the 3 nominated by the other. The final selection of the DRA will be decided by a coin toss between the two candidates.

The Department and the Contractor shall complete and adhere to the Dispute Resolution Advisor Agreement. No DRA meeting shall take place until the Dispute Resolution Advisor Agreement has been signed by all parties, unless all parties agree to sign it at the first meeting.

If DRA needs outside technical services, technical services shall be preapproved by both the Department and the Contractor.

DRA recommendations are nonbinding.

The Contractor shall not use the DRA for disputes between subcontractors or suppliers that have no grounds for a lawsuit against the Department.

DRA replacement is selected in the same manner as the original selection. The appointment of a replacement DRA will begin promptly upon determination of the need for replacement. The Dispute Resolution Advisor Agreement shall be amended to reflect the change of the DRA.

Failure of the Contractor to participate in selecting DRA will result in the withhold of 25 percent of the estimated value of all work performed during each estimate period that the Contractor fails to comply. DRA withholds will be released for payment on the next monthly progress payment following the date that the Contractor has provided assistance in choosing the DRA and no interest will be due the Contractor.

The State and the Contractor shall bear the costs and expenses of the DRA equally.

The DRA shall be compensated at an agreed rate of \$1,500 per day for time spent per meeting either at the start of the project or for a dispute. A member serving on more than one State DRA or Dispute Review Board, regardless the number of meetings per day shall not be paid more than the agreed rate per day. The agreed rate shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel, and incidentals for each day or portion thereof that the DRA is at an authorized DRA meeting.

No additional compensation will be made for time spent by the DRA to review and research activities outside the official DRA meetings unless that time, such as time spent evaluating and preparing recommendations on specific issues presented to the DRA, has been specifically agreed to in advance by the State and Contractor. Time away from the project that has been specifically agreed to in advance by the Department and the Contractor will be compensated at an agreed rate of \$150 per hour. The agreed amount of \$150 per hour shall include all incidentals including expenses for telephone, fax, and computer services.

The State will provide conference facilities for DRA meetings at no cost to the Contractor.

The Contractor shall make direct payments to the DRA for participation in authorized meetings and approved hourly rate charges from invoices submitted.

The State will reimburse the Contractor for the State's share of the costs.

There will be no markups applied to expenses associated with the DRA, either by the DRA or by the Contractor when requesting payment of the State's share of DRA expenses. Regardless of the DRA recommendation, neither party will be entitled to reimbursement of DRA costs from the other party.

The Contractor shall submit extra work bills and include invoices with original supporting documents for reimbursement of the State's share.

The cost of technical services will be borne equally by the State and Contractor. There will be no markups for these costs.

A copy of the "Dispute Resolution Advisor Agreement" to be executed by the Contractor, State and the DRA is as follows:

Form CEM 6206 Rev (04-06-07)

## **DISPUTE RESOLUTION ADVISOR AGREEMENT**

\_\_\_\_\_  
(Contract Identification)

Contract No. \_\_\_\_\_

**THIS DISPUTE RESOLUTION ADVISOR AGREEMENT, hereinafter called "AGREEMENT"**, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, between the State of California, acting through the California Department of Transportation and the Director of Transportation, hereinafter called the "STATE," \_\_\_\_\_ hereinafter called the "CONTRACTOR," and \_\_\_\_\_, the Dispute Resolution Advisor, hereinafter called the "DRA." .

WITNESSETH, that

WHEREAS, the STATE and the CONTRACTOR, hereinafter called the "parties," are now engaged in the construction on the State Highway project referenced above; and

WHEREAS, the special provisions for the above referenced contract provides for the establishment and operation of the DRA to assist in resolving disputes; and

WHEREAS, the DRA is composed of one person, chosen by the CONTRACTOR and the STATE;

NOW THEREFORE, in consideration of the terms, conditions, covenants, and performance contained herein, or attached and incorporated and made a part hereof, the STATE, the CONTRACTOR, and the DRA hereto agree as follows:

### **SECTION I DESCRIPTION OF WORK**

To assist in the timely resolution of disputes between the parties, the contract provides for the establishment and the operation of the DRA. The DRA is to fairly and impartially consider disputes placed before it and provide recommendations for resolution of these disputes to the parties. The DRA shall provide recommendations based on the facts related to the dispute, the contract and applicable laws and regulations. The DRA shall perform the services necessary to participate in the DRA's actions as designated in Section III, Scope of Work.

### **SECTION II DRA QUALIFICATIONS**

DRA shall be knowledgeable in the type of construction and contract documents anticipated by the contract and shall have completed training through the Dispute Review Board Foundation. In addition, it is desirable for the DRA to have served on several State Dispute Review Boards (DRB).

No DRA shall have prior direct involvement in this contract. No DRA shall have a financial interest in this contract or parties thereto, including but not limited to the CONTRACTOR, subcontractors, suppliers, consultants, and legal and business services, within a period 6 months prior to award and during this contract. Exceptions to above are compensation for services on this or other DRAs and DRBs or retirement payments or pensions received from a party that are not tied to, dependent on or affected by the net worth of the party.

DRA shall fully disclose all direct or indirect professional or personal relationships with all key members of the contract.

### **SECTION III SCOPE OF WORK**

The Scope of Work of the DRA includes, but is not limited to, the following:

#### **A. PROCEDURES**

The DRA shall meet with the parties at the start of the project to establish procedures that will govern the conduct of its business and reporting procedures in conformance with the requirements of the contract and the terms of this AGREEMENT. The DRA established procedures shall only be implemented upon approval by the parties. Subsequent meetings shall be held only to hear disputes between the parties.

The DRA shall not meet with, or discuss contract issues with individual parties.

State shall provide the DRA with the contract and all written correspondence regarding the dispute between the parties and, if available, the Contractor's supplemental notice of potential claim, and the Engineer's response to the supplemental notice of potential claim.

The parties shall not call the DRA who served on this contract as a witness in arbitration proceedings, which may arise from this contract.

The DRA shall have no claim against the STATE or the CONTRACTOR, or both, from claimed harm arising out of the parties' evaluations of the DRA's opinions.

#### **B. DISPUTE MEETING**

The term "dispute meeting" as used in this subsection shall refer to both the informal and traditional dispute meeting processes, unless otherwise noted.

If the CONTRACTOR requests a dispute meeting with the DRA, the Contractor must simultaneously notify the STATE. Upon being notified of the need for a dispute meeting, the DRA shall review and consider the dispute. The DRA shall determine the time and location of the dispute meeting with due consideration for the needs and preferences of the parties, while recognizing the importance of a speedy resolution to the dispute.

Dispute meetings shall be conducted at any location that would be convenient and provide required facilities and access to necessary documentation.

Only the STATE's Resident Engineer or Area Construction Engineer and the CONTRACTOR's or subcontractor's, if the dispute involves a subcontractor, Superintendent or Project Manager may present information at a dispute meeting. There shall be no participation of persons who are not directly involved in the contract or who do not have direct knowledge of the dispute. The exception to this is technical services, as described below:

The DRA, with approval of the parties, may obtain technical services necessary to adequately review the disputes presented, including audit, geotechnical, schedule analysis and other services. The parties' technical staff may supply those services as appropriate. The cost of technical services, as agreed to by the parties, shall be borne equally by the two parties as specified in an approved contract change order. The CONTRACTOR shall not be entitled to markups for the payments made for these services.

At the dispute meeting the DRA may ask questions, seek clarification, and request further clarification of data presented by either of the parties as may be necessary to assist in making a fully informed recommendation. However, the DRA shall refrain from expressing opinions on the merits of statements on matters under dispute during the parties' presentations. Each party will be given ample time to fully present its position, make rebuttals, provide relevant documents, and respond to DRA questions and requests.

There shall be no testimony under oath or cross-examination, during DRA dispute meetings. There shall be no reporting of the procedures by a shorthand reporter or by electronic means. Documents and verbal statements shall be received by the DRA in conformance with the rules and regulations established at the first meeting between the DRA and parties. These established rules and regulations need not comply with prescribed legal laws of evidence.

Failure to attend a dispute meeting by either of the parties shall be conclusively considered by the DRA as indication that the non-attending party considers all written documents and correspondence submitted as their entire and complete argument. The claimant shall discuss the dispute, followed by the other party. Each party shall then be allowed one or more rebuttals at the meeting until all aspects of the dispute are thoroughly covered.

##### **1. TRADITIONAL DISPUTE MEETING:**

The following procedure shall be used for the traditional dispute meeting:

- a. Within 5 days, after receiving the STATE's written response to the CONTRACTOR's supplemental notice of potential claim, the CONTRACTOR shall refer the dispute to the DRA, if the CONTRACTOR wishes to further pursue the dispute. The CONTRACTOR shall make the referral in writing to the DRA, simultaneously copied to the STATE. The written dispute referral shall describe the disputed matter in individual discrete segments, so that it will be clear to both parties and the DRA what discrete elements of the dispute have been resolved, and which remain unresolved, and shall include an estimate of the cost of the affected work and impacts, if any, on project completion.
- b. The parties shall each be afforded an opportunity to be present and to be heard by the DRA, and to offer evidence. Either party furnishing written evidence or documentation to the DRA must furnish copies of such information to the other party a minimum of 10 days prior to the date the DRA is scheduled to convene the meeting for the dispute. Either party shall produce such additional evidence as the DRA may deem necessary to reach an understanding and a determination of the dispute. The party furnishing additional evidence shall furnish copies of such additional evidence to the other party at the same time the evidence is provided to the DRA. The DRA shall not consider evidence not furnished in conformance with the terms specified herein.
- c. Upon receipt by the DRA of a written referral of a dispute, the DRA shall convene to review and consider the dispute. The dispute meeting shall be held no later than 25 days after receipt of the written referral unless otherwise agreed to by all parties.
- d. The DRA shall furnish a written report to both parties. The DRA may request clarifying information of either party within 5 days after the DRA dispute meeting. Requested information shall be submitted to the DRA within 5 days of the DRA request. The DRA shall complete its report and submit it to the parties within 10 days of the DRA dispute meeting, except that time extensions may be granted at the request of the DRA with the written concurrence of both parties. The report shall summarize the facts considered, the contract language, law or regulation viewed by the DRA as pertinent to the dispute, and the DRA's interpretation and philosophy in arriving at its conclusions and recommendations and, if appropriate, recommends guidelines for determining compensation. The DRA's written opinion shall stand on its own, without attachments or appendices.
- e. Within 10 days after receiving the DRA's report, both parties shall respond to the DRA in writing signifying that the dispute is either resolved or remains unresolved. Failure to provide the written response within the time specified, or a written rejection of the DRA's recommendation or response to a request for reconsideration presented in the report by either party, shall conclusively indicate that the party(s) failing to respond accepts the DRA recommendation. Immediately after responses have been received from both parties, the DRA shall provide copies of both responses to the parties simultaneously. Either party may request clarification of elements of the DRA's report from the DRA prior to responding to the report. The DRA shall consider any clarification request only if submitted within 5 days of receipt of the DRA's report, and if submitted simultaneously in writing to both the DRA and the other party. Each party may submit only one request for clarification for any individual DRA report. The DRA shall respond, in writing, to requests for clarification within 5 days of receipt of such requests.
- f. Either party may seek a reconsideration of the DRA's recommendation. The DRA shall only grant reconsideration based upon submission of new evidence and if the request is submitted within the 10 day time limit specified for response to the DRA's written report. Each party may submit only one request for reconsideration regarding an individual DRA recommendation.
- g. If the parties are able to settle their dispute with the aid of the DRA's report, the STATE and CONTRACTOR shall promptly accept and implement the settlement of the parties. If the parties cannot agree on compensation within 30 days of the acceptance by both parties of the settlement, either party may request the DRA to make a recommendation regarding compensation.

## **2. INFORMAL DISPUTE MEETING**

An informal dispute meeting shall be convened, only if, the parties and the DRA agree that this dispute resolution process is appropriate to settle the dispute.

The following procedure shall be used for the informal dispute meeting:

- a. The parties shall furnish the DRA with one copy of pertinent documents requested by the DRA that are or may become necessary for the DRA to perform its function. The party furnishing documents shall furnish such documents to the other party at the same time the document is provided to the DRA.
- b. After the dispute meeting has concluded; the DRA shall deliberate in private the same day, until a response to the parties is reached or as otherwise agreed to by the parties.
- c. The DRA then verbally delivers its recommendation with findings to the parties.
- d. After the recommendation is presented, the parties may ask for clarifications.
- e. Occasionally the DRA on complex issues may be unable to formulate a recommendation based on the information given at a dispute meeting. However, the DRA may provide the parties with advice on strengths and weaknesses of their prospective positions, in the hope of the parties reaching settlement.
- f. If the parties are able to settle their dispute with the aid of the DRA's opinion, the STATE and CONTRACTOR shall promptly accept and implement the settlement of the parties.
- g. The DRA will not be bound by its oral recommendation in the event that a dispute is later heard by the DRA in a traditional dispute meeting.

Unless the dispute is settled, use of the informal dispute meeting does not relive the parties of their responsibilities under Section 5-1.12, "Dispute Resolution Advisor," of the Special Provisions or Subsection, "Traditional Dispute Meeting," of this AGREEMENT. There will be no extension of time allowed for the process to permit the use of the informal dispute meeting, unless otherwise agreed to by the parties.

#### **SECTION IV TIME FOR BEGINNING AND COMPLETION**

Once established, the DRA shall be in operation until the day the Director accepts the contract. The DRA shall not begin work under the terms of this AGREEMENT until authorized in writing by the STATE or as agreed to by the parties.

#### **SECTION V PAYMENT**

DRA shall be compensated at an agreed rate of \$1,500 per day for time spent per meeting, either at the start of the project or for a dispute. A member serving on more than one State DRA or DRB, regardless the number of meetings per day, shall not be paid more than the agreed rate per day. The agreed rate shall be considered full compensation for onsite time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof that the DRA is at an authorized DRA meeting. No additional compensation will be made for time spent by DRA to review and research activities outside the official DRA meetings unless that time, (such as time spent evaluating and preparing recommendations on specific issues presented to the DRA), has been specifically agreed to in advance by the parties. Time away from the project, which has been specifically agreed to in advance by the parties, will be compensated at an agreed rate of \$150 per hour. The agreed amount of \$150 per hour shall include all incidentals including expenses for telephone, fax, and computer services. The State will provide administrative services such as conference facilities to the DRA.

##### **A. PAYMENT PROCESSING**

CONTRACTOR shall make direct payments to DRA for their participation in authorized meetings and approved hourly rate charges, from invoices submitted by the DRA, and technical services.

DRA may submit invoices to the CONTRACTOR for partial payment for work performed and services rendered for their participation in authorized meetings not more often than once per month during the progress of the work. The invoices shall be in a format approved by the parties and accompanied by a general description of activities performed during that billing period. Payment for hourly fees, at the agreed rate, shall not be paid to a DRA until the amount and extent of those fees are approved by the STATE and CONTRACTOR.

##### **B. INSPECTION OF COSTS RECORDS**

DRA and the CONTRACTOR shall keep available for inspection by representatives of the STATE and the United States, for a period of 3 years after final payment, the cost records and accounts pertaining to this AGREEMENT. If any litigation, claim, or audit arising out of, in connection with, or related to this contract is initiated before the expiration of the 3-year period, the cost records and accounts shall be retained until such litigation, claim, or audit involving the records is completed.

## **SECTION VI ASSIGNMENT OF TASKS OF WORK**

DRA shall not assign the work of this AGREEMENT.

## **SECTION VII TERMINATION OF A DRA MEMBER**

DRA may resign after providing not less than 15 days written notice of the resignation to the STATE and CONTRACTOR. The DRA may be terminated, by either party, for failing to fully comply at all times with all required employment or financial disclosure conditions of DRA membership in conformance with the terms of the contract and this AGREEMENT. Each party shall document the need for replacement and substantiate the replacement request in writing to the other party and the DRA.

## **SECTION VIII LEGAL RELATIONS**

The parties hereto mutually understand and agree that the DRA in the performance of duties is acting in the capacity of an independent agent and not as an employee of either party.

No party to this AGREEMENT shall bear a greater responsibility for damages or personal injury than is normally provided by Federal or State of California Law.

Notwithstanding the provisions of this contract that require the CONTRACTOR to indemnify and hold harmless the STATE, the parties shall jointly indemnify and hold harmless the DRA from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRA.

## **SECTION IX CONFIDENTIALITY**

The parties hereto mutually understand and agree that all documents and records provided by the parties in reference to issues brought before the DRA, which documents and records are marked "Confidential - for use by the DRA only," shall be kept in confidence and used only for the purpose of resolution of subject disputes, and for assisting in development of DRA findings and recommendations; that such documents and records will not be utilized or revealed to others, except to officials of the parties who are authorized to act on the subject disputes, for any purposes, during the life of this AGREEMENT. Upon termination of this AGREEMENT, said confidential documents and records, and all copies thereof, shall be returned to the parties who furnished them to the DRA. However, the parties understand that such documents may be subsequently discoverable and admissible in court or arbitration proceedings unless a protective order has been obtained by the party seeking further confidentiality.

## **SECTION X DISPUTES**

Disputes between the parties arising out of the work or other terms of this AGREEMENT that cannot be resolved by negotiation and mutual concurrence between the parties or through the administrative process provided in the contract shall be resolved by arbitration as provided in Section 9-1.10, "Arbitration," of the Standard Specifications. Disputes between the DRA and the parties that cannot be resolved by negotiation and mutual concurrence shall be resolved in the appropriate forum.

## **SECTION XI VENUE, APPLICABLE LAW, AND PERSONAL JURISDICTION**

In the event that any party, including the DRA, deems it necessary to institute arbitration proceedings to enforce any right or obligation under this AGREEMENT, the parties hereto agree that such action shall be initiated in the Office of Administrative Hearings of the State of California. The parties hereto agree that all questions shall be resolved by arbitration by application of California law and that the parties to such arbitration shall have the right of appeal from such decisions to the Superior Court in conformance with the laws of the State of California. Venue for the arbitration shall be Sacramento or any other location as agreed to by the parties.

## **SECTION XII FEDERAL REVIEW AND REQUIREMENTS**

On Federal-Aid contracts, the Federal Highway Administration shall have the right to review the work of the DRA in progress, except for private meetings or deliberations of the DRA.

Other Federal requirements in this agreement shall only apply to Federal-Aid contracts.

**SECTION XIII CERTIFICATION OF CONTRACTOR, DRA, AND STATE**

IN WITNESS WHEREOF, the parties hereto have executed this AGREEMENT as of the day and year first above written.

DRA

By: \_\_\_\_\_

Title: \_\_\_\_\_

CONTRACTOR

CALIFORNIA STATE DEPARTMENT  
OF TRANSPORTATION

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

**5-1.15C Dispute Review Board**

- Section 5-1.15C, "Dispute Review Board," applies to a contract over \$10 million.

**5-1.15C(1) General**

To assist in the resolution of disputes or potential claims arising out of the work of this project, a Dispute Review Board, hereinafter referred to as the "DRB," shall be established by the Engineer and Contractor cooperatively upon approval of the contract. The DRB is intended to assist the contract administrative claims resolution process as specified in the provisions in Section 9-1.04, "Notice of Potential Claim," and Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications and these special provisions. The DRB shall not serve as a substitute for provisions in the specifications in regard to filing potential claims. The requirements and procedures established in this section shall be a prerequisite to filing a claim, filing for arbitration, or filing for litigation prior or subsequent to project completion.

The DRB shall be utilized when dispute or potential claim resolution at the project level is unsuccessful. The DRB shall function as specified herein until the day of acceptance of the contract, at which time the work of the DRB will cease except for completion of unfinished reports. No DRB dispute meetings shall take place later than 30 days prior to acceptance of contract. After acceptance of contract, disputes or potential claims which have followed the dispute resolution processes of the Standard Specifications and these special provisions, but have not been resolved, shall be stated or restated by the Contractor, in response to the Proposed Final Estimate within the time limits provided in Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications. The State will review those claims in conformance with the provisions in Section 9-1.07B of the Standard Specifications. Following the adherence to and completion of the contractual administrative claims procedure, the Contractor may file for arbitration in conformance with the provisions in Section 9-1.10, "Arbitration," of the Standard Specifications and these special provisions.

Disputes, as used in this section, shall include differences of opinion, properly noticed as provided hereinafter, between the State and Contractor on matters related to the work and other subjects considered by the State or Contractor, or by both, to be of concern to the DRB on this project, except matters relating to Contractor, subcontractor or supplier potential claims not actionable against the Department as specified in these special provisions or quantification of disputes for overhead type expenses or costs. Disputes for overhead type expenses or costs shall conform to the requirements of Section 9-1.07B, "Final Payment and Claims," of the Standard Specifications. Whenever the term "dispute" or "disputes" is used herein, it shall be deemed to include potential claims as well as disputes.

The DRB shall serve as an advisory body to assist in the resolution of disputes between the State and the Contractor, hereinafter referred to as the "parties." The DRB shall consider disputes referred to it, and furnish written reports containing findings and recommendations pertaining to those disputes, to the parties to aid in resolution of the differences between them. DRB findings and recommendations are not binding on the parties.



### **5-1.15C(2) Selection Process, Disclosure and Appointments**

The DRB shall consist of one member selected by the State and approved by the Contractor, one member selected by the Contractor and approved by the State, and a third member selected by the first 2 members and approved by both the State and the Contractor. The third member shall act as the DRB Chairperson.

DRB members shall be especially knowledgeable in the type of construction and contract documents potentially anticipated by the contract. DRB members shall discharge their responsibilities impartially as an independent body, considering the facts and circumstances related to the matters under consideration, pertinent provisions of the contract and applicable laws and regulations.

The State and the Contractor shall nominate and approve DRB members in conformance with the terms and conditions of the Dispute Review Board Agreement and these special provisions, within 45 days of the approval of the contract. Each party shall provide written notification to the other of the name of their selected DRB nominee along with the prospective member's complete written disclosure statement.

Disclosure statements shall include a resume of the prospective member's experience and a declaration statement describing past, present, anticipated, and planned relationships, including indirect relationships through the prospective member's primary or full-time employer, to this project and with the parties involved in this construction contract, including but not limited to, relevant subcontractors or suppliers to the parties, parties' principals, or parties' counsel. DRB members shall also include a full disclosure of close professional or personal relationships with all key members of the contract. Objections to nominees must be based on a specific breach or violation of nominee responsibilities or on nominee qualifications under these provisions unless otherwise specified. The Contractor or the State may, on a one-time basis, object to the other's nominee without specifying a reason and this person will not be selected for the DRB. Another person shall then be nominated within 15 days.

The first duty of the State and Contractor selected members of the DRB shall be to select and recommend a prospective third DRB member to the parties for final selection and approval. The first 2 DRB members shall proceed with the selection of the third DRB member immediately upon receiving written notification from the State of their selection, and shall provide their recommendation simultaneously to the parties within 15 days of the notification.

The first 2 DRB members shall select a third DRB member subject to mutual approval of the parties or may mutually concur on a list of potentially acceptable third DRB members and submit the list to the parties for final selection and approval of the third member. The goal in the selection of the third member is to complement the professional experience of the first 2 members and to provide leadership for the DRB's activities.

The third prospective DRB member shall supply a full disclosure statement to the first 2 DRB members and to the parties prior to appointment.

An impasse shall be considered to have been reached if the parties are unable to approve a third member within 15 days of receipt of the recommendation of the first 2 DRB members, or if the first 2 DRB members are unable to agree upon a recommendation within their 15 day time limit. In the event of an impasse in selection of third DRB member the State and the Contractor shall each propose 3 candidates for the third DRB member position. The parties shall select the candidates proposed under this paragraph from the current list of arbitrators certified by the Public Works Contract Arbitration Committee created by Article 7.2 (commencing with Section 10245) of the State Contract Act. The first 2 DRB members shall then select one of the 6 proposed candidates in a blind draw.

No DRB member shall have prior direct involvement in this contract. No member shall have a financial interest in this contract or the parties thereto, within a period of 6 months prior to award of this contract or during the contract, except as follows:

- A. Compensation for services on this DRB.
- B. Ownership interest in a party or parties, documented by the prospective DRB member, that has been reviewed and determined in writing by the State to be sufficiently insignificant to render the prospective member acceptable to the State.
- C. Service as a member of other Dispute Review Boards on other contracts.
- D. Retirement payments or pensions received from a party that are not tied to, dependent on or affected by the net worth of the party.
- E. The above provisions apply to parties having a financial interest in this contract, including but not limited to contractors, subcontractors, suppliers, consultants, and legal and business services.

The Contractor or the State may reject any of the 3 DRB members who fail to fully comply at all times with all required employment and financial disclosure conditions of DRB membership as described in the Dispute Review

Board Agreement and as specified herein. A copy of the Dispute Review Board Agreement is included in this section.

The Contractor, the State, and the 3 members of the DRB shall complete and adhere to the Dispute Review Board Agreement in administration of this DRB within 15 days of the parties' concurrence in the selection of the third member. No DRB meeting shall take place until the Dispute Review Board Agreement has been signed by all parties. The State authorizes the Engineer to execute and administer the terms of the Agreement. The person(s) designated by the Contractor as authorized to execute contract change orders shall be authorized to execute and administer the terms of this agreement, or to delegate the authority in writing. The operation of the DRB shall be in conformance with the terms of the Dispute Review Board Agreement.

#### **5-1.15C(3) Compensation**

The State and the Contractor shall bear the costs and expenses of the DRB equally. Each DRB member shall be compensated at an agreed rate of \$1,200 per day if time spent per meeting, including on-site time plus one hour of travel time, is greater than 4 hours. Each DRB member shall be compensated at an agreed rate of \$700 per day if time spent per meeting, including on-site time plus one hour of travel time, is less than or equal to 4 hours. The agreed rates shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof, that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB members in review and research activities outside the official DRB meetings unless that time, (such as time spent evaluating and preparing recommendations on specific issues presented to the DRB), has been specifically agreed to in advance by the State and Contractor. Time away from the project, which has been specifically agreed to in advance by the parties, will be compensated at an agreed rate of \$125 per hour. The agreed amount of \$125 per hour shall include all incidentals including expenses for telephone, fax, and computer services. Members serving on more than one DRB involving the Department, regardless of the number of meetings per day, shall not be paid more than the all inclusive rate per day or rate per hour for an individual project. The State will provide, at no cost to the Contractor, administrative services such as conference facilities and secretarial services to the DRB. These special provisions and the Dispute Review Board Agreement state the provisions for compensation and expenses of the DRB. DRB members shall be compensated at the same daily and hourly rate. The Contractor shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges from invoices submitted by each DRB member. The State will reimburse the Contractor for the State's share of the costs. There will be no markups applied to expenses connected with the DRB, either by the DRB members or by the Contractor when requesting payment of the State's share of DRB expenses. Regardless of the DRB recommendation, neither party shall be entitled to reimbursement of DRB costs from the other party.

#### **5-1.15C(4) Replacement of DRB Members**

Service of a DRB member may be terminated at any time with not less than 15 days notice as follows:

- A. The State may terminate service of the State appointed member.
- B. The Contractor may terminate service of the Contractor appointed member.
- C. Upon the written recommendation of the State and Contractor appointed members for the removal of the third member.
- D. Upon resignation of a member.
- E. The State or Contractor may terminate the service of any member who fails to fully comply with all required employment and financial disclosure conditions of DRB membership.

When a member of the DRB is replaced, the replacement member shall be appointed in the same manner as the replaced member was appointed. The appointment of a replacement DRB member will begin promptly upon determination of the need for replacement and shall be completed within 15 days. Changes in either of the DRB members chosen by the 2 parties will not require re-selection of the third member, unless both parties agree to such re-selection in writing. The Dispute Review Board Agreement shall be amended to reflect the change of a DRB member.

#### **5-1.15C(5) Operation**

The following procedure shall be used for dispute resolution:

- A. If the Contractor objects to any decision, act or order of the Engineer, the Contractor shall give written notice of potential claim in conformance with the provisions in Section 9-1.04, "Notice of Potential Claim," of the Standard Specifications and these special provisions, including the provision of applicable cost documentation; or file written protests or notices in conformance with the provisions in the Standard Specifications and these special provisions.
- B. The Engineer will respond, in writing, to the Contractor's written supplemental notice of potential claim within 20 days of receipt of the notice.
- C. Within 15 days after receipt of the Engineer's written response, the Contractor shall, if the Contractor still objects, file a written reply with the Engineer, stating clearly and in detail the basis of the objection.
- D. Following an objection to the Engineer's written response, the Contractor shall refer the dispute to the DRB if the Contractor wishes to further pursue the objection to the Engineer's decision. The Contractor shall make the referral in writing to the DRB, simultaneously copied to the State, within 21 days after receipt of the written response from the Engineer. The written dispute referral shall describe the disputed matter in individual discrete segments so that it will be clear to both parties and the DRB what discrete elements of the dispute have been resolved, and which remain unresolved, and shall include an estimate of the cost of the affected work and impacts, if any, on project completion.
- E. By failing to submit the written notice of referral to the DRB, within 21 days after receipt of the Engineer's written response to the supplemental notice of potential claim, the Contractor waives future claims and arbitration on the matter in contention.
- F. The Contractor and the State shall each be afforded an opportunity to be present and to be heard by the DRB, and to offer evidence. Either party furnishing written evidence or documentation to the DRB must furnish copies of such information to the other party a minimum of 15 days prior to the date the DRB is scheduled to convene the meeting for the dispute. Either party shall produce such additional evidence as the DRB may deem necessary to reach an understanding and a determination of the dispute. The party furnishing additional evidence shall furnish copies of such additional evidence to the other party at the same time the evidence is provided to the DRB. The DRB shall not consider evidence not furnished in conformance with the terms specified herein.
- G. Upon receipt by the DRB of a written referral of a dispute, the DRB shall convene to review and consider the dispute. The dispute meeting shall be held no earlier than 30 days and no later than 60 days after receipt of the written referral unless otherwise agreed to by all parties. The DRB shall determine the time and location of the DRB dispute meeting, with due consideration for the needs and preferences of the parties while recognizing the paramount importance of a timely hearing of the dispute.
- H. There shall be no participation of either party's attorneys at DRB dispute meetings.
- I. There shall be no participation of persons who are not directly involved in the contract or who do not have direct knowledge of the dispute, including but not limited to consultants, except for expert testimony allowed at the discretion of the DRB and with approval prior to the dispute meeting by both parties.
- J. The DRB shall furnish a report, containing findings and recommendations as described in the Dispute Review Board Agreement, in writing to both the State and the Contractor. The DRB may request clarifying information of either party within 10 days after the DRB dispute meeting. Requested information shall be submitted to the DRB within 10 days of the DRB request. The DRB shall complete its report, including minority opinion, if any, and submit it to the parties within 30 days of the DRB dispute meeting, except that time extensions may be granted at the request of the DRB with the written concurrence of both parties. The report shall include the facts and circumstances related to the matters under consideration, pertinent provisions of the contract, applicable laws and regulations, and actual costs and time incurred as shown on the Contractor's cost accounting records. The DRB shall make recommendations on the merit of the dispute and, if appropriate, recommend guidelines for determining compensation.
- K. Within 30 days after receiving the DRB's report, both the State and the Contractor shall respond to the DRB in writing signifying that the dispute is either resolved or remains unresolved. Failure to provide the written response within the time specified, or a written rejection of the DRB's recommendation or response to a request for reconsideration presented in the report by either party, shall conclusively indicate that the party(s) failing to respond accepts the DRB recommendation. Immediately after responses have been received from both parties, the DRB shall provide copies of both responses to the parties simultaneously. Either party may request clarification of elements of the DRB's report from the DRB prior to responding to the report. The DRB shall consider any clarification request only if submitted within 10 days of receipt of the DRB's report, and if submitted simultaneously in writing to both the DRB and the other party. Each party may submit only one request for clarification for any individual DRB report. The DRB shall respond, in writing, to requests for clarification within 10 days of receipt of such requests.

- L. The DRB's recommendations, stated in the DRB's reports, are not binding on either party. Either party may seek a reconsideration of a recommendation of the DRB. The DRB shall only grant a reconsideration based upon submission of new evidence and if the request is submitted within the 30-day time limit specified for response to the DRB's written report. Each party may submit only one request for reconsideration regarding an individual DRB recommendation.
- M. If the State and the Contractor are able to resolve their dispute with the aid of the DRB's report, the State and Contractor shall promptly accept and implement the recommendations of the DRB. If the parties cannot agree on compensation within 60 days of the acceptance by both parties of the DRB's recommendation, either party may request the DRB to make a recommendation regarding compensation.
- N. The State or the Contractor shall not call DRB members who served on the DRB for this contract as witnesses in arbitration proceedings which may arise from this contract, and all documents created by the DRB shall be inadmissible as evidence in subsequent arbitration proceedings, except the DRB's final written reports on each issue brought before it.
- O. The State and Contractor shall jointly indemnify and hold harmless the DRB members from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRB.
- P. The DRB members shall have no claim against the State or the Contractor, or both, from claimed harm arising out of the parties' evaluations of the DRB's report.

**5-1.15C(6) Disputes Involving Subcontractor Potential Claims**

For purposes of this section, a "subcontractor potential claim" shall include any potential claim by a subcontractor (including also any pass through potential claims by a lower tier subcontractor or supplier) against the Contractor that is actionable by the Contractor against the Department which arises from the work, services, or materials provided or to be provided in connection with the contract. If the Contractor determines to pursue a dispute against the Department that includes a subcontractor potential claim, the dispute shall be processed and resolved in conformance with these special provisions and in conformance with the following:

- A. The Contractor shall identify clearly in submissions pursuant to this section, that portion of the dispute that involves a subcontractor potential claim or potential claims.
- B. The Contractor shall include, as part of its submission pursuant to Step D above, a certification (False Claims Act Certification) by the subcontractor's or supplier's officer, partner, or authorized representative with authority to bind the subcontractor and with direct knowledge of the facts underlying the subcontractor potential claim. The Contractor shall submit a certification that the subcontractor potential claim is acknowledged and forwarded by the Contractor. The form for these certifications is available from the Engineer.
- C. At DRB dispute meetings involving one or more subcontractor potential claims, the Contractor shall require that each subcontractor involved in the dispute have present an authorized representative with actual knowledge of the facts underlying the subcontractor potential claim to assist in presenting the subcontractor potential claim and to answer questions raised by the DRB members or the Department's representatives.
- D. Failure by the Contractor to declare a subcontractor potential claim on behalf of its subcontractor (including lower tier subcontractors' and suppliers' pass through potential claims) at the time of submission of the Contractor's potential claims, as provided hereunder, shall constitute a release of the State by the Contractor of such subcontractor potential claim.
- E. The Contractor shall include in all subcontracts under this contract that subcontractors and suppliers of any tier (a) agree to submit subcontractor potential claims to the Contractor in a proper form and in sufficient time to allow processing by the Contractor in conformance with the Dispute Review Board resolution specifications; (b) agree to be bound by the terms of the Dispute Review Board provisions to the extent applicable to subcontractor potential claims; (c) agree that, to the extent a subcontractor potential claim is involved, completion of all steps required under these Dispute Review Board special provisions shall be a condition precedent to pursuit by the subcontractor of other remedies permitted by law, including without limitation of a lawsuit against the Contractor; and (d) agree that the existence of a dispute resolution process for disputes involving subcontractor potential claims shall not be deemed to create any claim, right, or cause of action by any subcontractor or supplier against the Department.

Notwithstanding the foregoing, this Dispute Review Board special provision shall not apply to, and the DRB shall not have the authority to consider, subcontractor potential claims between the subcontractor(s) or supplier(s) and the Contractor that are not actionable by the Contractor against the Department.

**5-1.15C(7) Dispute Review Board Agreement**

A copy of the "Dispute Review Board Agreement" to be executed by the Contractor, State and the 3 DRB members after approval of the contract follows:

Form 6202 Rev (09/01/02)

**DISPUTE REVIEW BOARD AGREEMENT**

\_\_\_\_\_  
(Contract Identification)

Contract No. \_\_\_\_\_

**THIS DISPUTE REVIEW BOARD AGREEMENT, hereinafter called "AGREEMENT",** made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, between the State of California, acting through the California Department of Transportation and the Director of Transportation, hereinafter called the "STATE," \_\_\_\_\_ hereinafter called the "CONTRACTOR," and the Dispute Review Board, hereinafter called the "DRB" consisting of the following members:

\_\_\_\_\_,  
(Contractor Appointee)

\_\_\_\_\_,  
(State Appointee)

and \_\_\_\_\_  
(Third Person)

WITNESSETH, that

WHEREAS, the STATE and the CONTRACTOR, hereinafter called the "parties," are now engaged in the construction on the State Highway project referenced above; and

WHEREAS, the special provisions for the above referenced contract provides for the establishment and operation of the DRB to assist in resolving disputes; and

WHEREAS, the DRB is composed of three members, one selected by the STATE, one selected by the CONTRACTOR, and the third member selected by the other two members and approved by the parties;

NOW THEREFORE, in consideration of the terms, conditions, covenants, and performance contained herein, or attached and incorporated and made a part hereof, the STATE, the CONTRACTOR, and the DRB members hereto agree as follows:

**SECTION I DESCRIPTION OF WORK**

To assist in the resolution of disputes between the parties, the contract provides for the establishment and the operation of the DRB. The intent of the DRB is to fairly and impartially consider disputes placed before it and provide written recommendations for resolution of these disputes to both parties. The members of this DRB shall perform the services necessary to participate in the DRB's actions as designated in Section II, Scope of Work.

**SECTION II SCOPE OF WORK**

The scope of work of the DRB includes, but is not limited to, the following:

## **A. OBJECTIVE**

The principal objective of the DRB is to assist in the timely resolution of disputes between the parties arising from performance of this contract. It is not intended for either party to default on their normal responsibility to amicably and fairly settle their differences by indiscriminately assigning them to the DRB. It is intended that the mere existence of the DRB will encourage the parties to resolve disputes without resorting to this review procedure. But when a dispute that is serious enough to warrant the DRB's review does develop, the process for prompt and efficient action will be in place.

## **B. PROCEDURES**

The DRB shall render written reports on disputes between the parties arising from the construction contract. Prior to consideration of a dispute, the DRB shall establish rules and regulations that will govern the conduct of its business and reporting procedures in conformance with the requirements of the contract and the terms of this AGREEMENT. DRB recommendations, resulting from its consideration of a dispute, shall be furnished in writing to both parties. The recommendations shall be based on facts and circumstances involved in the dispute, pertinent contract provisions, applicable laws and regulations. The recommendations shall find one responsible party in a dispute; shared or "jury" determinations shall not be rendered. The DRB shall make recommendations on the merit of the dispute, and if appropriate, recommend guidelines for determining compensation. If the parties cannot agree on compensation within 60 days of the acceptance by both parties of the DRB's recommendation, either party may request the DRB to make a recommendation regarding compensation.

The DRB shall refrain from officially giving advice or consulting services to anyone involved in the contract. The individual members shall act in a completely independent manner and while serving as members of the DRB shall have no consulting business connections with either party or its principals or attorneys or other affiliates (subcontractors, suppliers, etc.) who have a beneficial interest in the contract.

During scheduled meetings of the DRB as well as during dispute meetings, DRB members shall refrain from expressing opinions on the merits of statements on matters under dispute or potential dispute. Opinions of DRB members expressed in private sessions shall be kept strictly confidential. Individual DRB members shall not meet with, or discuss contract issues with individual parties, except as directed by the DRB Chairperson. Such discussions or meetings shall be disclosed to both parties. Other discussions regarding the project between the DRB members and the parties shall be in the presence of all three members and both parties. Individual DRB members shall not undertake independent investigations of any kind pertaining to disputes or potential disputes, except with the knowledge of both parties and as expressly directed by the DRB Chairperson.

## **C. CONSTRUCTION SITE VISITS, PROGRESS MEETINGS AND FIELD INSPECTIONS**

The DRB members shall visit the project site and meet with representatives of the parties to keep abreast of construction activities and to develop familiarity with the work in progress. Scheduled progress meetings shall be held at or near the project site. The DRB shall meet at least once at the start of the project, and at least once every 4 months thereafter. The frequency, exact time, and duration of additional site visits and progress meetings shall be as recommended by the DRB and approved by the parties consistent with the construction activities or matters under consideration and dispute. Each meeting shall consist of a round table discussion and a field inspection of the work being performed on the contract, if necessary. Each meeting shall be attended by representatives of both parties. The agenda shall generally be as follows:

1. Meeting opened by the DRB Chairperson.
2. Remarks by the STATE's representative.
3. A description by the CONTRACTOR's representative of work accomplished since the last meeting; the current schedule status of the work; and a forecast for the coming period.
4. An outline by the CONTRACTOR's representative of potential problems and a description of proposed solutions.
5. An outline by the STATE's representative of the status of the work as the STATE views it.
6. A brief description by the CONTRACTOR's or STATE's representative of potential claims or disputes which have surfaced since the last meeting.
7. A summary by the STATE's representative, the CONTRACTOR's representative, or the DRB of the status of past disputes and potential claims.

The STATE's representative will prepare minutes of all progress meetings and circulate them for revision and approval by all concerned within 10 days of the meeting.

The field inspection shall cover all active segments of the work, the DRB being accompanied by both parties' representatives. The field inspection may be waived upon mutual agreement of the parties.

#### **D. DRB CONSIDERATION AND HANDLING OF DISPUTES**

Upon receipt by the DRB of a written referral of a dispute, the DRB shall convene to review and consider the dispute. The dispute meeting shall be held no earlier than 30 days and no later than 60 days after receipt of the written referral, unless otherwise agreed to by all parties. The DRB shall determine the time and location of DRB dispute meetings, with due consideration for the needs and preferences of the parties while recognizing the paramount importance of speedy resolution of issues. No dispute meetings shall take place later than 30 days prior to acceptance of contract.

Normally, dispute meetings shall be conducted at or near the project site. However, any location that would be more convenient and still provide required facilities and access to necessary documentation shall be satisfactory.

Both parties shall be given the opportunity to present their evidence at these dispute meetings. It is expressly understood that the DRB members are to act impartially and independently in the consideration of the contract provisions, applicable laws and regulations, and the facts and conditions surrounding any dispute presented by either party, and that the recommendations concerning any such dispute are advisory and nonbinding on the parties.

The DRB may request that written documentation and arguments from both parties be sent to each DRB member, through the DRB Chairperson, for review before the dispute meeting begins. A party furnishing written documentation to the DRB shall furnish copies of such information to the other party at the same time that such information is supplied to the DRB.

DRB dispute meetings shall be informal. There shall be no testimony under oath or cross-examination. There shall be no reporting of the procedures by a shorthand reporter or by electronic means. Documents and verbal statements shall be received by the DRB in conformance with acceptance standards established by the DRB. These standards need not comply with prescribed legal laws of evidence.

The third DRB member shall act as Chairperson for dispute meetings and all other DRB activities. The parties shall have a representative at all dispute meetings. Failure to attend a duly noticed dispute meeting by either of the parties shall be conclusively considered by the DRB as indication that the non-attending party considers written submittals as their entire and complete argument. The claimant shall discuss the dispute, followed by the other party. Each party shall then be allowed one or more rebuttals until all aspects of the dispute are thoroughly covered. DRB members shall ask questions, seek clarification, and request further data from either of the parties as may be necessary to assist in making a fully informed recommendation. The DRB may request from either party documents or information that would assist the DRB in making its findings and recommendations including, but not limited to, documents used by the CONTRACTOR in preparing the bid for the project. A refusal by a party to provide information requested by the DRB may be considered by the DRB as an indication that the requested material would tend to disprove that party's position. In large or complex cases, additional dispute meetings may be necessary in order to consider all the evidence presented by both parties. All involved parties shall maintain the confidentiality of all documents and information, as provided in this AGREEMENT.

During dispute meetings, no DRB member shall express an opinion concerning the merit of any facet of the case. DRB deliberations shall be conducted in private, with interim individual views kept strictly confidential.

After dispute meetings are concluded, the DRB shall meet in private and reach a conclusion supported by 2 or more members. Private sessions of the DRB may be held at a location other than the job site or by electronic conferencing as deemed appropriate, in order to expedite the process.

The DRB's findings and recommendations, along with discussion of reasons therefor, shall then be submitted as a written report to both parties. Recommendations shall be based on the pertinent contract provisions, applicable laws and regulations, and facts and circumstances related to the dispute. The report shall be thorough in discussing the facts considered, the contract language, law or regulation viewed by the DRB as pertinent to the issues, and the DRB's interpretation and philosophy in arriving at its conclusions and recommendations. The DRB's report shall stand on its own, without attachments or appendices. The DRB Chairperson shall furnish a copy of the written recommendation report to the DRB Coordinator, Division of Construction, MS 44, P.O. Box 942874, Sacramento, CA 94274.

With prior written approval of both parties, the DRB may obtain technical services necessary to adequately review the disputes presented, including audit, geotechnical, schedule analysis and other services. The parties' technical staff may supply those services as appropriate. The cost of technical services, as agreed to by the parties,

shall be borne equally by the 2 parties as specified in an approved contract change order. The CONTRACTOR will not be entitled to markups for the payments made for these services.

The DRB shall resist submittal of incremental portions of information by either party, in the interest of making a fully informed decision and recommendation.

The DRB shall make every effort to reach a unanimous decision. If this proves impossible, the dissenting member shall prepare a minority opinion, which shall be included in the DRB's report.

Although both parties should place weight upon the DRB's recommendations, they are not binding. Either party may appeal a recommendation to the DRB for reconsideration. However, reconsideration shall only be allowed when there is new evidence to present, and the DRB shall accept only one appeal from each party pertaining to an individual DRB recommendation. The DRB shall hear appeals in conformance with the terms described in the Section entitled "Dispute Review Board" in the special provisions.

#### **E. DRB MEMBER REPLACEMENT**

Should the need arise to appoint a replacement DRB member, the replacement DRB member shall be appointed in the same manner as the original DRB members were appointed. The selection of a replacement DRB member shall begin promptly upon notification of the necessity for a replacement and shall be completed within 15 days. This AGREEMENT shall be amended to indicate change in DRB membership.

### **SECTION III CONTRACTOR RESPONSIBILITIES**

The CONTRACTOR shall furnish to each DRB member one copy of pertinent documents that are or may become necessary for the DRB to perform their function. Pertinent documents are written notices of potential claim, responses to those notices, drawings or sketches, calculations, procedures, schedules, estimates, or other documents which are used in the performance of the work or in justifying or substantiating the CONTRACTOR's position. The CONTRACTOR shall also furnish a copy of such pertinent documents to the STATE, in conformance with the terms outlined in the special provisions.

### **SECTION IV STATE RESPONSIBILITIES**

The STATE will furnish the following services and items:

#### **A. CONTRACT RELATED DOCUMENTS**

The STATE will furnish to each DRB member one copy of Notice to Contractors and Special Provisions, Proposal and Contract, Plans, Standard Specifications, and Standard Plans, change orders, written instructions issued by the STATE to the CONTRACTOR, or other documents pertinent to any dispute that has been referred to the DRB and necessary for the DRB to perform its function.

#### **B. COORDINATION AND SERVICES**

The STATE, through the Engineer, will, in cooperation with the CONTRACTOR, coordinate the operations of the DRB. The Engineer will arrange or provide conference facilities at or near the project site and provide secretarial and copying services to the DRB without charge to the CONTRACTOR.

### **SECTION V TIME FOR BEGINNING AND COMPLETION**

Once established, the DRB shall be in operation until the day of acceptance of the contract. The DRB members shall not begin work under the terms of this AGREEMENT until authorized in writing by the STATE.

### **SECTION VI PAYMENT**

#### **A. ALL INCLUSIVE RATE PAYMENT**

The STATE and the CONTRACTOR shall bear the costs and expenses of the DRB equally. Each DRB member shall be compensated at an agreed rate of \$1,200 per day if time spent per meeting, including on-site time plus one hour of travel time, is greater than 4 hours. Each DRB member shall be compensated at an agreed rate of \$700 per day if time spent per meeting, including on-site time plus one hour of travel time, is less than or equal to 4 hours. The agreed rates shall be considered full compensation for on-site time, travel expenses, transportation, lodging, time for travel and incidentals for each day, or portion thereof, that the DRB member is at an authorized DRB meeting. No additional compensation will be made for time spent by DRB members in review and research



activities outside the official DRB meetings unless that time has been specifically agreed to in advance by the STATE and CONTRACTOR. Time away from the project that has been specifically agreed to in advance by the parties will be compensated at an agreed rate of \$125 per hour. The agreed amount of \$125 per hour shall include all incidentals including expenses for telephone, fax, and computer services. Members serving on more than one DRB involving the State, regardless of the number of meetings per day, shall not be paid more than the all inclusive rate per day or rate per hour for an individual project. The STATE will provide, at no cost to the CONTRACTOR, administrative services such as conference facilities and secretarial services to the DRB.

## **B. PAYMENTS**

DRB members shall be compensated at the same rate. The CONTRACTOR shall make direct payments to each DRB member for their participation in authorized meetings and approved hourly rate charges from invoices submitted by each DRB member. The STATE will reimburse the CONTRACTOR for its share of the costs of the DRB.

The DRB members may submit invoices to the CONTRACTOR for partial payment for work performed and services rendered for their participation in authorized meetings not more often than once per month during the progress of the work. The invoices shall be in a format approved by the parties and accompanied by a general description of activities performed during that billing period. Payment for hourly fees, at the agreed rate, shall not be paid to a DRB member until the amount and extent of those fees are approved by the STATE and CONTRACTOR.

Invoices shall be accompanied by original supporting documents, which the CONTRACTOR shall include with the extra work billing when submitting for reimbursement of the STATE's share of cost from the STATE. The CONTRACTOR will be reimbursed for one-half of approved costs of the DRB. No markups will be added to the CONTRACTOR's payment.

## **C. INSPECTION OF COSTS RECORDS**

The DRB members and the CONTRACTOR shall keep available for inspection by representatives of the STATE and the United States, for a period of 3 years after final payment, the cost records and accounts pertaining to this AGREEMENT. If any litigation, claim, or audit arising out of, in connection with, or related to this contract is initiated before the expiration of the 3-year period, the cost records and accounts shall be retained until such litigation, claim, or audit involving the records is completed.

## **SECTION VII ASSIGNMENT OF TASKS OF WORK**

The DRB members shall not assign the work of this AGREEMENT.

## **SECTION VIII TERMINATION OF DRB MEMBERS**

DRB members may resign from the DRB by providing not less than 15 days written notice of the resignation to the STATE and CONTRACTOR. DRB members may be terminated by their original appointing power or by either party, for failing to fully comply at all times with all required employment and financial disclosure conditions of DRB membership in conformance with the terms of the contract.

## **SECTION IX LEGAL RELATIONS**

The parties hereto mutually understand and agree that the DRB member in the performance of duties on the DRB, is acting in the capacity of an independent agent and not as an employee of either party.

No party to this AGREEMENT shall bear a greater responsibility for damages or personal injury than is normally provided by Federal or State of California Law.

Notwithstanding the provisions of this contract that require the CONTRACTOR to indemnify and hold harmless the STATE, the parties shall jointly indemnify and hold harmless the DRB members from and against all claims, damages, losses, and expenses, including but not limited to attorney's fees, arising out of and resulting from the findings and recommendations of the DRB.

## **SECTION X CONFIDENTIALITY**

The parties hereto mutually understand and agree that all documents and records provided by the parties in reference to issues brought before the DRB, which documents and records are marked "Confidential - for use by the DRB only," shall be kept in confidence and used only for the purpose of resolution of subject disputes, and for assisting in development of DRB findings and recommendations; that such documents and records will not be



## SECTION 6 CONTROL OF MATERIALS

(Issued 07-01-08)

### Replace Section 6-1.05 with:

#### 6-1.05 Specific Brand or Trade Name and Substitution

A reference to a specific brand or trade name establishes a quality standard and is not intended to limit competition. You may use a product that is equal to or better than the specified brand or trade name if approved.

Submit a substitution request within a time period that:

1. Follows Contract award
2. Allows 30 days for review
3. Causes no delay

Include substantiating data with the substitution request that proves the substitution:

1. Is of equal or better quality and suitability
2. Causes no delay in product delivery and installation

### Add:

#### 6-1.075 GUARANTEE

Guarantee the work remains free from substantial defects for 1 year after contract acceptance except for work parts for which you were relieved of maintenance and protection. Guarantee each of these relieved work parts for 1 year after the relief date.

The guarantee excludes damage or displacement caused by an event outside your control including:

1. Normal wear and tear
2. Improper operation
3. Insufficient maintenance
4. Abuse
5. Unauthorized change
6. Act of God

During the guarantee period, repair or replace each work portion having a substantial defect.

The Department does not pay for corrective work.

During corrective work activities, provide insurance coverage specified for coverage before contract acceptance.

The contract bonds must be in full force and effect until the later of:

1. Expiration of guarantee period
2. Completion of corrective work

If a warranty specification conflicts with Section 6-1.075, "Guarantee," comply with the warranty specification.

During the guarantee period, the Engineer monitors the completed work. If the Engineer finds work having a substantial defect, the Engineer lists work parts and furnishes you the list.

Within 10 days of receipt of the list, submit for authorization a detailed plan for correcting the work. Include a schedule that includes:

1. Start and completion dates
2. List of labor, equipment, materials, and any special services you plan to use
3. Work related to the corrective work, including traffic control and temporary and permanent pavement markings

The Engineer notifies you when the plan is authorized. Start corrective work and related work within 15 days of notice.

If the Engineer determines corrective work is urgently required to prevent injury or property damage:

1. The Engineer furnishes you a request to start emergency repair work and a list of parts requiring corrective work
2. Mobilize within 24 hours and start work
3. Submit a corrective work plan within 5 days of starting emergency repair work

If you fail to perform work as specified, the Department may perform the work and bill you.

**Add:**

**6-1.085 BUY AMERICA (23 CFR 635.410)**

For a Federal-aid contract, furnish steel and iron materials to be incorporated into the work that are produced in the United States except:

1. Foreign pig iron and processed, pelletized, and reduced iron ore may be used in the domestic production of the steel and iron materials [60 Fed Reg 15478 (03/24/1995)]
2. If the total combined cost of the materials does not exceed the greater of 0.1 percent of the total bid or \$2 500, material produced outside the United States may be used

Production includes:

1. Processing steel and iron materials, including smelting or other processes that alter the physical form or shape (such as rolling, extruding, machining, bending, grinding, and drilling) or chemical composition
2. Coating application, including epoxy coating, galvanizing, and painting, that protects or enhances the value of steel and iron materials

For steel and iron materials to be incorporated into the work, submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications that certifies all production processes occurred in the United States except for the above exceptions.

**Add:**

**6-1.087 BUY AMERICA (PUB RES CODE § 42703(d))**

Furnish crumb rubber to be incorporated into the work that is produced in the United States and is derived from waste tires taken from vehicles owned and operated in the United States.

For crumb rubber to be incorporated into the work, submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance," of the Standard Specifications that certifies only crumb rubber manufactured in the United States and derived from waste tires taken from vehicles owned and operated in the United States is used.

**In Section 6-2.01 replace the 7th paragraph with:**

Upon the Contractor's written request, the Department tests materials from an untested local source. If satisfactory material from that source is used in the work, the Department does not charge the Contractor for the tests; otherwise, the Department deducts the test cost.

**In Section 6-2.02 delete the 3rd paragraph.**



Enforcement. The Contractor must pay any money withheld from and owed to a subcontractor upon receipt of notification by the Division of Labor Standards Enforcement that the wage complaint has been resolved. If notice of the resolution of the wage complaint has not been received by the Contractor within 180 days of the filing of a valid notice of completion or acceptance of the public works project, whichever occurs later, the Contractor must pay all moneys withheld from the subcontractor to the Department. The Department withholds these moneys pending the final decision of an enforcement action.

**In Section 7-1.01A(2) replace the 7th paragraph with:**

Changes in general prevailing wage determinations apply to the contract when the Director of Industrial Relations has issued them at least 10 days before advertisement (Labor Code § 1773.6 and 8 CA Code of Regs 16204).

**In Section 7-1.01A(3) replace the 2nd paragraph with:**

The Department withholds the penalties specified in subdivision (g) of Labor Code § 1776 for noncompliance with the requirements in Section 1776.

**In Section 7-1.01A(3) replace the 4th paragraph with:**

The Department withholds for delinquent or inadequate payroll records (Labor Code § 1771.5). If the Contractor has not submitted an adequate payroll record by the month's 15th day for the period ending on or before the 1st of that month, the Department withholds 10 percent of the monthly progress estimate, exclusive of mobilization. The Department does not withhold more than \$10 000 or less than \$1000.

**In Section 7-1.01A(3) delete the 5th paragraph.**

**Add:**

**7-1.01K Solid Waste Disposal and Recycling**

Submit an annual Solid Waste Disposal and Recycling Report between January 1 and 15 for each year work is performed under the Contract at any time during the previous calendar year. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project from January 1 through December 31 of the previous calendar year.

Submit a final annual Solid Waste Disposal and Recycling Report within 5 business days after Contract acceptance. Show the types and amounts of project-generated solid waste taken to or diverted from landfills or reused on the project from January 1 to contract acceptance.

For each failure to submit a completed form, the Department withholds \$10,000.

**Add:**

**7-1.01L Asbestos and Hazardous Substances**

• Upon discovery, immediately stop working in and notify the Engineer of areas where asbestos or a hazardous substance is present if the:

1. Contractor reasonably believes the substance is asbestos as defined in Labor Code § 6501.7 or a hazardous substance as defined in Health & Safety Code §§ 25316 and 25317
2. Presence is not described in the contract
3. Substance has not been made harmless

**Add:**

**7-1.01M Archaeological Discoveries**

If archaeological materials are discovered at the job site, protect and leave them undisturbed in place and comply with:

1. Pub Res Code §§ 5097.5, 5097.98, and 5097.99
2. 14 CA Code of Regs § 4308
4. Penal Code § 622-1/2
5. Health & Safety Code § 7050.5

Archaeological materials are the remains of past human activity including historic-period archaeological materials and prehistoric Native American archaeological materials. Nonhuman fossils are not archaeological materials unless they show direct evidence of human use or alteration or when found in direct physical association with archaeological materials

Historic-period archaeological materials include cultural remains beginning with initial European contact in California but at least 50 years old and include:

1. Trash deposits or clearly defined disposal pits containing tin cans, bottles, ceramic dishes, or other refuse indicating previous occupation or use of the site
2. Structural remains of stone, brick, concrete, wood, or other building material found above or below ground
3. Human skeletal remains from the historic period, with or without coffins or caskets, including any associated grave goods

Prehistoric Native American archaeological materials include:

1. Human skeletal remains or associated burial goods such as beads or ornaments
2. Evidence of tool making or hunting such as arrowheads and associated chipping debris of fine-grained materials such as obsidian, chert, or basalt
3. Evidence of plant processing such as pestles, grinding slabs, or stone bowls
4. Evidence of habitation such as cooking pits, stone hearths, packed or burnt earth floors
5. Remains from food processing such as concentrations of discarded or burnt animal bone, shellfish remains, or burnt rocks used in cooking

Immediately upon discovering archaeological materials, stop all work within an 18.5-meter radius of the archaeological materials and notify the Engineer. Archaeological materials discovered are the property of the State. Do not resume work within the 18.5-meter radius of the discovery until the Engineer gives you written approval. If, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of an archeological discovery or investigation or recovery of archeological materials, you will be compensated for resulting losses and an extension of time will be granted in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

The Department may use other forces to investigate and recover archaeological materials from the location of the discovery. If ordered by the Engineer furnish labor, material, tools, and equipment to secure the location of the discovery and assist in the investigation or recovery of archaeological materials; the cost of this work will be paid for as extra work as specified in Section 4-1.03D, "Extra Work," of the Standard Specifications.

**In Section 7-1.02 in the 2nd paragraph, replace the 4th sentence with:**

Trucks used to haul treated base, portland cement concrete, or hot mix asphalt shall enter onto the base to dump at the nearest practical entry point ahead of spreading equipment.

**In Section 7-1.02 between the 4th and 5th paragraphs, add:**

Loads imposed on existing, new, or partially completed structures shall not exceed the load carrying capacity of the structure or any portion of the structure as determined by AASHTO LRFD with interims and California

Amendments, Design Strength Limit State II. The compressive strength of concrete ( $f'_c$ ) to be used in computing the load carrying capacity shall be the smaller of the following:

1. Actual compressive strength at the time of loading
2. Value of  $f'_c$  shown on the plans for that portion of the structure or 2.5 times the value of  $f_c$  (extreme fiber compressive stress in concrete at service loads) shown on the plans for portions of the structure where no  $f'_c$  is shown

**In Section 7-1.06 in the 1st paragraph, add:**

The Contractor's Injury and Illness Prevention Program shall be submitted to the Engineer. The program shall address the use of personal and company issued electronic devices during work. The use of entertainment and personal communication devices in the work zone shall not be allowed. Workers may use a communication device for business purposes in the work area, at a location where their safety and the safety of other workers and the traveling public is not compromised.

**In Section 7-1.09 replace the 8th paragraph with:**

Signs, lights, flags, and other warning and safety devices and their use shall conform to the requirements set forth in Part 6 of the California MUTCD except where a discrepancy exists between the California MUTCD and the specifications; for discrepancies, comply with the specifications. Signs or other protective devices furnished and erected by the Contractor, at the Contractor's expense, as above provided, shall not obscure the visibility of, nor conflict in intent, meaning and function of either existing signs, lights and traffic control devices or any construction area signs and traffic control devices for which furnishing of, or payment for, is provided elsewhere in the specifications. Signs furnished and erected by the Contractor, at the Contractor's expense, shall be approved by the Engineer as to size, wording and location.

**In Section 7-1.09 replace the 14th paragraph with:**

The Contractor shall notify the Engineer not less than 18 days and no more than 90 days prior to the anticipated start of an operation that will change the vertical or horizontal clearance available to public traffic (including shoulders).

**In Section 7-1.09 replace the 16th paragraph with:**

When vertical clearance is temporarily reduced to 4.72 m or less, low clearance warning signs shall be placed in accordance with Part 2 of the California MUTCD and as directed by the Engineer. Signs shall conform to the dimensions, color, and legend requirements of the California MUTCD and these specifications except that the signs shall have black letters and numbers on an orange retroreflective background. W12-2P signs shall be illuminated so that the signs are clearly visible.

**Add to Section 7-1.09:**

The Contractor shall install temporary railing (Type K) between a lane open to public traffic and an excavation, obstacle or storage area when the following conditions exist:

- A. Excavations-The near edge of the excavation is 3.6 m or less from the edge of the lane, except:
  1. Excavations covered with sheet steel or concrete covers of adequate thickness to prevent accidental entry by traffic or the public.
  2. Excavations less than 0.3 m deep.
  3. Trenches less than 0.3 m wide for irrigation pipe or electrical conduit, or excavations less than 0.3 m in diameter.
  4. Excavations parallel to the lane for the purpose of pavement widening or reconstruction.
  5. Excavations in side slopes, where the slope is steeper than 4:1 (horizontal:vertical).



- 6. Excavations protected by existing barrier or railing.
  - B. Temporarily Unprotected Permanent Obstacles-The work includes the installation of a fixed obstacle together with a protective system, such as a sign structure together with protective railing, and the Contractor elects to install the obstacle prior to installing the protective system; or the Contractor, for the Contractor's convenience and with permission of the Engineer, removes a portion of an existing protective railing at an obstacle and does not replace such railing complete in place during the same day.
  - C. Storage Areas-Material or equipment is stored within 3.6 m of the lane and the storage is not otherwise prohibited by the provisions of the Standard Specifications and these special provisions.

The approach end of temporary railing (Type K), installed in conformance with the provisions in this section "Public Safety" and in Section 7-1.09, "Public Safety," of the Standard Specifications, shall be offset a minimum of 4.6 m from the edge of the traffic lane open to public traffic. The temporary railing shall be installed on a skew toward the edge of the traffic lane of not more than 0.3 m transversely to 3 m longitudinally with respect to the edge of the traffic lane. If the 4.6 m minimum offset cannot be achieved, the temporary railing shall be installed on the 10 to 1 skew to obtain the maximum available offset between the approach end of the railing and the edge of the traffic lane, and an array of temporary crash cushion modules shall be installed at the approach end of the temporary railing.

Temporary railing (Type K) shall be secured in place before starting work for which the temporary railing is required.

Except for installing, maintaining and removing traffic control devices, whenever work is performed or equipment is operated in the following work areas, the Contractor shall close the adjacent traffic lane unless otherwise provided in the Standard Specifications and these special provisions:

Approach Speed of Public Traffic (Posted Limit) (Kilometers Per Hour)	Work Areas
Over 72 (45 Miles Per Hour)	Within 1.8 m of a traffic lane but not on a traffic lane
56 to 72 (35 to 45 Miles Per Hour)	Within 0.9 m of a traffic lane but not on a traffic lane

The lane closure provisions of this section shall not apply if the work area is protected by permanent or temporary railing or barrier.

When traffic cones or delineators are used to delineate a temporary edge of a traffic lane, the line of cones or delineators shall be considered to be the edge of the traffic lane, however, the Contractor shall not reduce the width of an existing lane to less than 3 m without written approval from the Engineer.

When work is not in progress on a trench or other excavation that required closure of an adjacent lane, the traffic cones or portable delineators used for the lane closure shall be placed off of and adjacent to the edge of the traveled way. The spacing of the cones or delineators shall be not more than the spacing used for the lane closure.

Suspended loads or equipment shall not be moved nor positioned over public traffic or pedestrians.

**In Section 7-1.11 in the 2nd paragraph, replace the last sentence with:**

The cost of the repairs must be borne by the Contractor and will be deducted.

**Replace Section 7-1.12 with:**

**7-1.12 INDEMNIFICATION AND INSURANCE**

The Contractor's obligations regarding indemnification of the State of California and the requirements for insurance shall conform to the provisions in Section 3-1.025, "Insurance Policies," and Sections 7-1.12A, "Indemnification," and 7-1.12B, "Insurance," of this Section 7-1.12.

**7-1.12A Indemnification**

The Contractor shall defend, indemnify, and save harmless the State, including its officers, employees, and agents (excluding agents who are design professionals) from any and all claims, demands, causes of action, damages, costs, expenses, actual attorneys' fees, losses or liabilities, in law or in equity (Section 7-1.12A Claims) arising out of or in connection with the Contractor's performance of this contract for:

1. Bodily injury including, but not limited to, bodily injury, sickness or disease, emotional injury or death to persons, including, but not limited to, the public, any employees or agents of the Contractor, the State, or any other contractor; and
2. Damage to property of anyone including loss of use thereof; caused or alleged to be caused in whole or in part by any negligent or otherwise legally actionable act or omission of the Contractor or anyone directly or indirectly employed by the Contractor or anyone for whose acts the Contractor may be liable.

Except as otherwise provided by law, these requirements apply regardless of the existence or degree of fault of the State. The Contractor is not obligated to indemnify the State for Claims arising from conduct delineated in Civil Code Section 2782 and to Claims arising from any defective or substandard condition of the highway that existed at or before the start of work, unless this condition has been changed by the work or the scope of the work requires the Contractor to maintain existing highway facilities and the Claim arises from the Contractor's failure to maintain. The Contractor's defense and indemnity obligation shall extend to Claims arising after the work is completed and accepted if the Claims are directly related to alleged acts or omissions by the Contractor that occurred during the course of the work. State inspection is not a waiver of full compliance with these requirements.

The Contractor's obligation to defend and indemnify shall not be excused because of the Contractor's inability to evaluate liability or because the Contractor evaluates liability and determine that the Contractor is not liable. The Contractor shall respond within 30 days to the tender of any Claim for defense and indemnity by the State, unless this time has been extended by the State. If the Contractor fails to accept or reject a tender of defense and indemnity within 30 days, in addition to any other remedy authorized by law, the Department may withhold such funds the State reasonably considers necessary for its defense and indemnity until disposition has been made of the Claim or until the Contractor accepts or rejects the tender of defense, whichever occurs first.

With respect to third-party claims against the Contractor, the Contractor waives all rights of any type to express or implied indemnity against the State, its officers, employees, or agents (excluding agents who are design professionals).

Nothing in the Contract is intended to establish a standard of care owed to any member of the public or to extend to the public the status of a third-party beneficiary for any of these indemnification specifications.

#### **7-1.12B Insurance**

##### **7-1.12B(1) General**

Nothing in the contract is intended to establish a standard of care owed to any member of the public or to extend to the public the status of a third-party beneficiary for any of these insurance specifications.

##### **7-1.12B(2) Casualty Insurance**

The Contractor shall procure and maintain insurance on all of its operations with companies acceptable to the State as follows:

1. The Contractor shall keep all insurance in full force and effect from the beginning of the work through contract acceptance.
2. All insurance shall be with an insurance company with a rating from A.M. Best Financial Strength Rating of A- or better and a Financial Size Category of VII or better.
3. The Contractor shall maintain completed operations coverage with a carrier acceptable to the State through the expiration of the patent deficiency in construction statute of repose set forth in Code of Civil Procedure Section 337.1.

##### **7-1.12B(3) Workers' Compensation and Employer's Liability Insurance**

In accordance with Labor Code Section 1860, the Contractor shall secure the payment of worker's compensation in accordance with Labor Code Section 3700.

In accordance with Labor Code Section 1861, the Contractor shall submit to the Department the following certification before performing the work:

I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.

Contract execution constitutes certification submittal.

The Contractor shall provide Employer's Liability Insurance in amounts not less than:

1. \$1 000 000 for each accident for bodily injury by accident
2. \$1 000 000 policy limit for bodily injury by disease
3. \$1 000 000 for each employee for bodily injury by disease

If there is an exposure of injury to the Contractor's employees under the U.S. Longshoremen's and Harbor Workers' Compensation Act, the Jones Act, or under laws, regulations, or statutes applicable to maritime employees, coverage shall be included for such injuries or claims.

**7-1.12B(4) Liability Insurance**

**7-1.12B(4)(a) General**

The Contractor shall carry General Liability and Umbrella or Excess Liability Insurance covering all operations by or on behalf of the Contractor providing insurance for bodily injury liability and property damage liability for the following limits and including coverage for:

1. Premises, operations, and mobile equipment
2. Products and completed operations
3. Broad form property damage (including completed operations)
4. Explosion, collapse, and underground hazards
5. Personal injury
6. Contractual liability

**7-1.12B(4)(b) Liability Limits/Additional Insureds**

The limits of liability shall be at least the amounts shown in the following table:

Total Bid	For Each Occurrence <sup>1</sup>	Aggregate for Products/Completed Operation	General Aggregate <sup>2</sup>	Umbrella or Excess Liability <sup>3</sup>
≤\$1 000 000	\$1 000 000	\$2 000 000	\$2 000 000	\$5 000 000
>\$1 000 000 ≤\$5 000 000	\$1 000 000	\$2 000 000	\$2 000 000	\$10 000 000
>\$5 000 000 ≤\$25 000 000	\$2 000 000	\$2 000 000	\$4 000 000	\$15 000 000
>\$25 000 000	\$2 000 000	\$2 000 000	\$4 000 000	\$25 000 000
<ol style="list-style-type: none"> <li>1. Combined single limit for bodily injury and property damage.</li> <li>2. This limit shall apply separately to the Contractor's work under this contract.</li> <li>3. The umbrella or excess policy shall contain a clause stating that it takes effect (drops down) in the event the primary limits are impaired or exhausted.</li> </ol>				

The Contractor shall not require certified Small Business subcontractors to carry Liability Insurance that exceeds the limits in the table above. Notwithstanding the limits specified herein, at the option of the Contractor, the liability insurance limits for certified Small Business subcontractors of any tier may be less than those limits specified in the table. For Small Business subcontracts, "Total Bid" shall be interpreted as the amount of subcontracted work to a certified Small Business.

The State, including its officers, directors, agents (excluding agents who are design professionals), and employees, shall be named as additional insureds under the General Liability and Umbrella Liability Policies with respect to liability arising out of or connected with work or operations performed by or on behalf of the Contractor under this contract. Coverage for such additional insureds does not extend to liability:

1. Arising from any defective or substandard condition of the roadway which existed at or before the time the Contractor started work, unless such condition has been changed by the work or the scope of the work requires the Contractor to maintain existing roadway facilities and the claim arises from the Contractor's

- failure to maintain;
2. For claims occurring after the work is completed and accepted unless these claims are directly related to alleged acts or omissions of the Contractor that occurred during the course of the work; or
  3. To the extent prohibited by Insurance Code Section 11580.04

Additional insured coverage shall be provided by a policy provision or by an endorsement providing coverage at least as broad as Additional Insured (Form B) endorsement form CG 2010, as published by the Insurance Services Office (ISO), or other form designated by the Department.

**7-1.12B(4)(c) Contractor's Insurance Policy is Primary**

The policy shall stipulate that the insurance afforded the additional insureds applies as primary insurance. Any other insurance or self-insurance maintained by the State is excess only and shall not be called upon to contribute with this insurance.

**7-1.12B(5) Automobile Liability Insurance**

The Contractor shall carry automobile liability insurance, including coverage for all owned, hired, and nonowned automobiles. The primary limits of liability shall be not less than \$1 000 000 combined single limit each accident for bodily injury and property damage. The umbrella or excess liability coverage required under Section 7-1.12B(4)(b) also applies to automobile liability.

**7-1.12B(6) Policy Forms, Endorsements, and Certificates**

The Contractor shall provide its General Liability Insurance under Commercial General Liability policy form No. CG0001 as published by the Insurance Services Office (ISO) or under a policy form at least as broad as policy form No. CG0001.

**7-1.12B(7) Deductibles**

The State may expressly allow deductible clauses, which it does not consider excessive, overly broad, or harmful to the interests of the State. Regardless of the allowance of exclusions or deductions by the State, the Contractor is responsible for any deductible amount and shall warrant that the coverage provided to the State is in accordance with Section 7-1.12B, "Insurance."

**7-1.12B(8) Enforcement**

The Department may assure the Contractor's compliance with its insurance obligations. Ten days before an insurance policy lapses or is canceled during the contract period, the Contractor shall submit to the Department evidence of renewal or replacement of the policy.

If the Contractor fails to maintain any required insurance coverage, the Department may maintain this coverage and withhold or charge the expense to the Contractor or terminate the Contractor's control of the work in accordance with Section 8-1.08, "Termination of Control."

The Contractor is not relieved of its duties and responsibilities to indemnify, defend, and hold harmless the State, its officers, agents, and employees by the Department's acceptance of insurance policies and certificates.

Minimum insurance coverage amounts do not relieve the Contractor for liability in excess of such coverage, nor do they preclude the State from taking other actions available to it, including the withholding of funds under this contract.

**7-1.12B(9) Self-Insurance**

Self-insurance programs and self-insured retentions in insurance policies are subject to separate annual review and approval by the State.

If the Contractor uses a self-insurance program or self-insured retention, the Contractor shall provide the State with the same protection from liability and defense of suits as would be afforded by first-dollar insurance. Execution of the contract is the Contractor's acknowledgement that the Contractor will be bound by all laws as if the Contractor were an insurer as defined under Insurance Code Section 23 and that the self-insurance program or self-insured retention shall operate as insurance as defined under Insurance Code Section 22.

**In Section 7-1.13 delete the 5th and 6th paragraphs.**

**Add:**

**7-1.50 FEDERAL LAWS FOR FEDERAL-AID CONTRACTS**

**7-1.50A General**

Section 7-1.50, "Federal Laws for Federal-Aid Contracts," includes specifications required in a Federal-aid construction contract and applies to a Federal-aid contract.

Form FHWA-1273 is included in the contract in Section 7-1.50B, "FHWA-1273." Some contract terms on the form are different than those used in other contract parts as shown in the following table:

FHWA-1273 Term	Equivalent Term Used in Other Contract Parts
SHA	Department
SHA contracting officer	Engineer
SHA resident engineer	Engineer

**7-1.50B FHWA-1273**

FHWA-1273 Electronic version -- March 10, 1994  
with revised Section VI

**REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Payment of Predetermined Minimum Wage
- V. Statements and Payrolls
- VI. Record of Materials, Supplies, and Labor
- VII. Subletting or Assigning the Contract
- VIII. Safety: Accident Prevention
- IX. False Statements Concerning Highway Projects
- X. Implementation of Clean Air Act and Federal Water Pollution Control Act
- XI. Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion
- XII. Certification Regarding Use of Contract Funds for Lobbying

**ATTACHMENTS**

- A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

**I. GENERAL**

- 1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
- 2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.
- 3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
- 4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

- Section I, paragraph 2;
- Section IV, paragraphs 1, 2, 3, 4, and 7;
- Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.
6. **Selection of Labor:** During the performance of this contract, the contractor shall not:
  - a. discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
  - b. employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

## II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. **Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 *et seq.*) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
  - a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
  - b. The contractor will accept as his operating policy the following statement:
 

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training."
2. **EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.
3. **Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
  - a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
  - b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
  - c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

- d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
  - e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
4. **Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
- a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
  - b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
  - c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.
5. **Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
- a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
  - b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
  - c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
  - d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.
6. **Training and Promotion:**
- a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
  - b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.
  - c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

- d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.
7. **Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:
- a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
  - b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
  - c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.
  - d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these specifications, such contractor shall immediately notify the SHA.
8. **Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.
- a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
  - b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.
  - c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.
9. **Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.
- a. The records kept by the contractor shall document the following:
    1. The number of minority and non-minority group members and women employed in each work classification on the project;
    2. The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;
    3. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and



4. The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.
- b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

### **III. NONSEGREGATED FACILITIES**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

- a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.
- b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).
- c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

### **IV. PAYMENT OF PREDETERMINED MINIMUM WAGE**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. **General:**
  - a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b) (2) of the Davis- Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

- b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.
- c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

**2. Classification:**

- a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.
- b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:
  - 1. the work to be performed by the additional classification requested is not performed by a classification in the wage determination;
  - 2. the additional classification is utilized in the area by the construction industry;
  - 3. the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and
  - 4. with respect to helpers, when such a classification prevails in the area in which the work is performed.
- c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

**3. Payment of Fringe Benefits:**

- a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.
- b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

**4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:**

a. Apprentices:

1. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.
2. The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.
3. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.
4. In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

1. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.
2. The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.
3. Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

4. In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- c. **Helpers:**

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, who is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. **Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. **Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. **Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. **Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. **Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the contract Work Hours and Safety

Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

**V. STATEMENTS AND PAYROLLS**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

**1. Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

**2. Payrolls and Payroll Records:**

- a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.
- b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.
- c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices, trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.
- d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
  1. that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;
  2. that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;
  3. that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

- e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.
- f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.
- g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

## **VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR**

(As of May 22, 2007, Form FHWA-47 is no longer required.)

## **VII. SUBLETTING OR ASSIGNING THE CONTRACT**

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).
  - a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.
  - b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.
2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.
4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

## **VIII. SAFETY: ACCIDENT PREVENTION**

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).
3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

**IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by Engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

**NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS**

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more that \$10,000 or imprisoned not more than 5 years or both."

**X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 *et seq.*, as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 *et seq.*, as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.
2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.
3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

## **XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

### **1. Instructions for Certification - Primary Covered Transactions:**

(Applicable to all Federal-aid contracts - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
- d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
- g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded From Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.
- i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other



remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and  
Voluntary Exclusion--Primary Covered Transactions**

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
  - a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
  - b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
  - d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**2. Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Covered Transactions:**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
  - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
  - b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**7-1.50C Female and Minority Goals**

To comply with Section II, "Nondiscrimination," of "Required Contract Provisions Federal-Aid Construction Contracts," the Department is including in Section 7-1.50C, "Female and Minority Goals," female and minority utilization goals for Federal-aid construction contracts and subcontracts that exceed \$10,000.

The nationwide goal for female utilization is 6.9 percent.

The goals for minority utilization [45 Fed Reg 65984 (10/3/1980)] are as follows:

**Minority Utilization Goals**

Economic Area		Goal (Percent)
174	Redding CA: Non-SMSA Counties: CA Lassen; CA Modoc; CA Plumas; CA Shasta; CA Siskiyou; CA Tehama	6.8
175	Eureka, CA Non-SMSA Counties: CA Del Norte; CA Humboldt; CA Trinity	6.6
176	San Francisco-Oakland-San Jose, CA: SMSA Counties: 7120 Salinas-Seaside-Monterey, CA CA Monterey 7360 San Francisco-Oakland CA Alameda; CA Contra Costa; CA Marin; CA San Francisco; CA San Mateo 7400 San Jose, CA CA Santa Clara, CA 7485 Santa Cruz, CA CA Santa Cruz 7500 Santa Rosa CA Sonoma 8720 Vallejo-Fairfield-Napa, CA CA Napa; CA Solano Non-SMSA Counties: CA Lake; CA Mendocino; CA San Benito	28.9  25.6   19.6  14.9  9.1  17.1  23.2
177	Sacramento, CA: SMSA Counties: 6920 Sacramento, CA CA Placer; CA Sacramento; CA Yolo Non-SMSA Counties CA Butte; CA Colusa; CA El Dorado; CA Glenn; CA Nevada; CA Sierra; CA Sutter; CA Yuba	16.1  14.3
178	Stockton-Modesto, CA: SMSA Counties: 5170 Modesto, CA CA Stanislaus 8120 Stockton, CA CA San Joaquin Non-SMSA Counties CA Alpine; CA Amador; CA Calaveras; CA Mariposa; CA Merced; CA Toulumne	12.3  24.3  19.8
179	Fresno-Bakersfield, CA SMSA Counties: 0680 Bakersfield, CA CA Kern 2840 Fresno, CA CA Fresno Non-SMSA Counties: CA Kings; CA Madera; CA Tulare	19.1  26.1  23.6
180	Los Angeles, CA: SMSA Counties: 0360 Anaheim-Santa Ana-Garden Grove, CA CA Orange 4480 Los Angeles-Long Beach, CA CA Los Angeles 6000 Oxnard-Simi Valley-Ventura, CA	11.9  28.3  21.5

	CA Ventura 6780 Riverside-San Bernardino-Ontario, CA CA Riverside; CA San Bernardino	19.0
	7480 Santa Barbara-Santa Maria-Lompoc, CA CA Santa Barbara	19.7
	Non-SMSA Counties CA Inyo; CA Mono; CA San Luis Obispo	24.6
181	San Diego, CA: SMSA Counties 7320 San Diego, CA CA San Diego	16.9
	Non-SMSA Counties CA Imperial	18.2

For each July during which work is performed under the contract, you and each non-material-supplier subcontractor with a subcontract of \$10,000 or more must complete Form FHWA PR-1391 (Appendix C to 23 CFR 230). Submit the forms by August 15.

### 7-1.50D Training

Section 7-1.50D, "Training," applies if a training goal is specified in the special provisions.

As part of your equal opportunity affirmative action program, provide on-the-job training to develop full journeymen in the types of trades or job classifications involved.

You have primary responsibility for meeting this training goal.

If you subcontract a contract part, determine how many trainees or apprentices are to be trained by the subcontractor.

Include these training requirements in your subcontract.

Where feasible, 25 percent of apprentices or trainees in each occupation must be in their 1st year of apprenticeship or training.

Distribute the number of apprentices or trainees among the work classifications on the basis of your needs and the availability of journeymen in the various classifications within a reasonable recruitment area.

Before starting work, submit to the Department:

1. Number of apprentices or trainees to be trained for each classification
2. Training program to be used
3. Training starting date for each classification

Obtain the Department's approval for this submitted information before you start work. The Department credits you for each apprentice or trainee you employ on the work who is currently enrolled or becomes enrolled in an approved program.

The primary objective of Section 7-1.50D, "Training," is to train and upgrade minorities and women toward journeymen status. Make every effort to enroll minority and women apprentices or trainees, such as conducting systematic and direct recruitment through public and private sources likely to yield minority and women apprentices or trainees, to the extent they are available within a reasonable recruitment area. Show that you have made the efforts. In making these efforts, do not discriminate against any applicant for training.

Do not employ as an apprentice or trainee an employee:

1. In any classification in which the employee has successfully completed a training course leading to journeyman status or in which the employee has been employed as a journeyman
2. Who is not registered in a program approved by the State's State Administrator of Apprenticeship

Ask the employee if the employee has successfully completed a training course leading to journeyman status or has been employed as a journeyman. Your records must show the employee's answers to the questions.

In your training program, establish the minimum length and training type for each classification. The Department and FHWA approves a program if one of the following is met:

1. It is calculated to:



**Replace Section 8-1.01 with:**

**8-1.01 (Blank)**

**In Section 8-1.02 replace the 2nd paragraph with:**

If the Contractor assigns the right to receive contract payments, the Department accepts the assignment upon the Engineer's receipt of a notice. Assigned payments remain subject to deductions and withholds described in the contract. The Department may use withheld payments for work completion whether payments are assigned or not.

**Add to Section 8-1.08:**

For a Federal-aid contract, the Department may terminate your control of the work for failure to include "Required Contract Provisions, Federal-Aid Construction Contracts" in subcontracts.

^^

**SECTION 9 MEASUREMENT AND PAYMENT**  
**(Issued 07-01-08)**

**In Section 9-1.02 in the 1st paragraph, replace the last sentence with:**

Neither the payment of any estimate nor of any retained percentage or withhold relieves the Contractor of any obligation to make good any defective work or material.

**Add to Section 9-1.02:**

The Department pays 10 percent per year interest for unpaid and undisputed:

1. Progress payments
2. After-acceptance payment except for claims

For these payments, interest starts to accrue 30 days after the 1st working day following the 20th day of the month payment is due.

The Department pays 6 percent per year interest for accepted claims. Interest starts to accrue 61 days after the Department accepts a Final Claim Statement.

The Department pays 6 percent per year interest for awards in arbitration (Civ Code § 3289).

If the amount of a deduction or withhold exceeds final payment, the Department invoices you for the difference, to be paid upon receipt.

**In Section 9-1.03A replace the 3rd and 4th paragraphs with:**

The above markups shall constitute full compensation for all delay costs, overhead costs and profit which shall be deemed to include all items of expense not specifically designated as cost or equipment rental in Sections 9-1.03A(1), "Labor," 9-1.03A(2), "Materials," and 9-1.03A(3), "Equipment Rental." The total payment made as provided above shall be deemed to be the actual cost of the work and shall constitute full compensation therefor.

If a subcontractor performs work at force account, accept an additional 5 percent markup to the total cost of that work paid at force account, including markups specified in Section 9-1.03, "Force Account Payment," as reimbursement for additional administrative costs.

**In Section 9-1.03C delete the 6th paragraph.**

**Replace Section 9-1.04 with:**

**9-1.04 NOTICE OF POTENTIAL CLAIM**

It is the intention of this section that disputes between the parties arising under and by virtue of the contract be brought to the attention of the Engineer at the earliest possible time in order that the matters may be resolved, if possible, or other appropriate action promptly taken.

Disputes will not be considered unless the Contractor has first complied with specified notice or protest requirements, including Section 4-1.03, "Changes," Section 5-1.116, "Differing Site Conditions," Section 8-1.06, "Time of Completion," Section 8-1.07, "Liquidated Damages," and Section 8-1.10, "Utility and Non-Highway Facilities."

For disputes arising under and by virtue of the contract, including an act or failure to act by the Engineer, the Contractor shall provide a signed written initial notice of potential claim to the Engineer within 5 days from the date the dispute first arose. The initial notice of potential claim shall provide the nature and circumstances involved in the dispute which shall remain consistent through the dispute. The initial notice of potential claim shall be submitted on Form CEM-6201A furnished by the Department and shall be certified with reference to the California False Claims Act, Government Code Sections 12650-12655. The Contractor shall assign an exclusive identification number for each dispute, determined by chronological sequencing, based on the date of the dispute.

The exclusive identification number for each dispute shall be used on the following corresponding documents:

1. Initial notice of potential claim
2. Supplemental notice of potential claim
3. Full and final documentation of potential claim
4. Corresponding claim included in the Contractor's written statement of claims

The Contractor shall provide the Engineer the opportunity to examine the site of work within 5 days from the date of the initial notice of potential claim. The Contractor shall proceed with the performance of contract work unless otherwise specified or directed by the Engineer.

Throughout the disputed work, the Contractor shall maintain records that provide a clear distinction between the incurred direct costs of disputed work and that of undisputed work. The Contractor shall allow the Engineer access to the Contractor's project records deemed necessary by the Engineer to evaluate the potential claim within 20 days of the date of the Engineer's written request.

Within 15 days of submitting the initial notice of potential claim, the Contractor shall provide a signed supplemental notice of potential claim to the Engineer that provides the following information:

1. The complete nature and circumstances of the dispute which caused the potential claim
2. The contract provisions that provide the basis of claim
3. The estimated cost of the potential claim, including an itemized breakdown of individual costs and how the estimate was determined
4. A time impact analysis of the project schedule that illustrates the effect on the scheduled completion date due to schedule changes or disruptions where a request for adjustment of contract time is made

The information provided in items 1 and 2 above shall provide the Contractor's complete reasoning for additional compensation or adjustments.

The supplemental notice of potential claim shall be submitted on Form CEM-6201B furnished by the Department and shall be certified with reference to the California False Claims Act, Government Code Sections 12650-12655. The Engineer will evaluate the information presented in the supplemental notice of potential claim and provide a written response to the Contractor within 20 days of its receipt. If the estimated cost or effect on the scheduled completion date changes, the Contractor shall update information in items 3 and 4 above as soon as the change is recognized and submit this information to the Engineer.

Within 30 days of the completion of work related to the potential claim, the Contractor shall provide the full and final documentation of potential claim to the Engineer that provides the following information:

1. A detailed factual narration of events fully describing the nature and circumstances that caused the dispute, including, but not limited to, necessary dates, locations, and items of work affected by the dispute
2. The specific provisions of the contract that support the potential claim and a statement of the reasons these provisions support and provide a basis for entitlement of the potential claim



3. When additional monetary compensation is requested, the exact amount requested calculated in conformance with Section 9-1.03, "Force Account Payment," or Section 8-1.09, "Right of Way Delays," including an itemized breakdown of individual costs. These costs shall be segregated into the following cost categories:
  - 3.1. Labor – A listing of individuals, classifications, regular hours and overtime hours worked, dates worked, and other pertinent information related to the requested reimbursement of labor costs
  - 3.2. Materials – Invoices, purchase orders, location of materials either stored or incorporated into the work, dates materials were transported to the project or incorporated into the work, and other pertinent information related to the requested reimbursement of material costs
  - 3.3. Equipment – Listing of detailed description (make, model, and serial number), hours of use, dates of use and equipment rates. Equipment rates shall be at the applicable State rental rate as listed in the Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rates," in effect when the affected work related to the dispute was performed.
  - 3.4. Other categories as specified by the Contractor or the Engineer
4. When an adjustment of contract time is requested the following information shall be provided:
  - 4.1. The specific dates for which contract time is being requested
  - 4.2. The specific reasons for entitlement to a contract time adjustment
  - 4.3. The specific provisions of the contract that provide the basis for the requested contract time adjustment
  - 4.4. A detailed time impact analysis of the project schedule. The time impact analysis shall show the effect of changes or disruptions on the scheduled completion date to demonstrate entitlement to a contract time adjustment.
5. The identification and copies of the Contractor's documents and the substance of oral communications that support the potential claim

The full and final documentation of the potential claim shall be submitted on Form CEM-6201C furnished by the Department and shall be certified with reference to the California False Claims Act, Government Code Sections 12650-12655.

Pertinent information, references, arguments, and data to support the potential claim shall be included in the full and final documentation of potential claim. Information submitted subsequent to the full and final documentation submittal will not be considered. Information required in the full and final documentation of potential claim, as listed in items 1 to 5 above, that is not applicable to the dispute may be exempted as determined by the Engineer. No full and final documentation of potential claim will be considered that does not have the same nature and circumstances, and basis of claim as those specified on the initial and supplemental notices of potential claim.

The Engineer will evaluate the information presented in the full and final documentation of potential claim and provide a written response to the Contractor within 30 days of its receipt unless otherwise specified. The Engineer's receipt of the full and final documentation of potential claim shall be evidenced by postal receipt or the Engineer's written receipt if delivered by hand. If the full and final documentation of potential claim is submitted by the Contractor after acceptance of the work by the Director, the Engineer need not provide a written response.

Provisions in this section shall not apply to those claims for overhead costs and administrative disputes that occur after issuance of the proposed final estimate. Administrative disputes are disputes of administrative deductions or withholds, contract item quantities, contract item adjustments, interest payments, protests of contract change orders as provided in Section 4-1.03A, "Procedure and Protest," and protests of the Weekly Statement of Working Days as provided in Section 8-1.06, "Time of Completion." Administrative disputes that occur prior to issuance of the proposed final estimate shall follow applicable requirements of this section. Information listed in the supplemental notice and full and final documentation of potential claim that is not applicable to the administrative dispute may be exempted as determined by the Engineer.

Unless otherwise specified in the special provisions, the Contractor may pursue the administrative claim process pursuant to Section 9-1.07B, "Final Payment and Claims," for any potential claim found by the Engineer to be without merit.

Failure of the Contractor to conform to specified dispute procedures shall constitute a failure to pursue diligently and exhaust the administrative procedures in the contract, and is deemed as the Contractor's waiver of the potential claim and a waiver of the right to a corresponding claim for the disputed work in the administrative claim

process in conformance with Section 9-1.07B, "Final Payment of Claims," and shall operate as a bar to arbitration pursuant to Section 10240.2 of the California Public Contract Code.

**Replace Section 9-1.05 with:**

**9-1.05 STOP NOTICE WITHHOLDS**

The Department may withhold payments to cover claims filed under Civ Code § 3179 et seq.

**Add:**

**9-1.053 PERFORMANCE FAILURE WITHHOLDS**

During each estimate period you fail to comply with a contract part, including submittal of a document as specified, the Department withholds a part of the progress payment. The documents include quality control plans, schedules, traffic control plans, and water pollution control submittals.

For 1 performance failure, the Department withholds 25 percent of the progress payment but does not withhold more than 10 percent of the total bid.

For multiple performance failures, the Department withholds 100 percent of the progress payment but does not withhold more than 10 percent of the total bid.

The Department returns performance-failure withholds in the progress payment following the correction of noncompliance.

**Add:**

**9-1.055 PENALTY WITHHOLDS**

Penalties include fines and damages that are proposed, assessed, or levied against you or the Department by a governmental agency or citizen lawsuit. Penalties are also payments made or costs incurred in settling alleged permit violations of Federal, State, or local laws, regulations, or requirements. The cost incurred may include the amount spent for mitigation or correcting a violation.

If you or the Department is assessed a penalty, the Department may withhold the penalty amount until the penalty disposition has been resolved. The Department may withhold penalty funds and notify you within 15 days of the withhold. If the penalty amount is less than the amount being withheld from progress payments for retentions, the Department will not withhold the penalty amount.

If the penalty is resolved for less than the amount withheld, the Department pays interest at a rate of 6 percent per year on the excess withhold. If the penalty is not resolved, the withhold becomes a deduction.

Instead of the withhold, you may provide a bond payable to the Department of Transportation equal to the highest estimated liability for any disputed penalties proposed.

**Add:**

**9-1.057 PROGRESS WITHHOLDS FOR FEDERAL-AID CONTRACTS**

Section 9-1.057, "Progress Withholds for Federal-Aid Contracts," applies to a Federal-aid contract.

The Department withholds 10 percent of a partial payment for noncompliant progress. Noncompliant progress occurs when:

1. Total days to date exceed 75 percent of the revised contract working days
2. Percent of working days elapsed exceeds the percent of value of work completed by more than 15 percent

The Engineer determines the percent of working days elapsed by dividing the total days to date by the revised contract working days and converting the quotient to a percentage.

The Engineer determines the percent of value of work completed by summing payments made to date and the amount due on the current progress estimate, dividing this sum by the current total estimated value of the work, and converting the quotient to a percentage. These amounts are shown on the Progress Payment Voucher.

When the percent of working days elapsed minus the percent of value of work completed is less than or equal to 15 percent, the Department returns the withhold in the next progress payment.

**In Section 9-1.06 replace the 3rd paragraph with:**

For a non-Federal-aid project, the Department retains 10 percent of the estimated value of the work done and 10 percent of the value of materials estimated to have been furnished and delivered and unused or furnished and stored as part security for the fulfillment of the contract by the Contractor, except that at any time after 20 percent of the work has been completed, if the Engineer finds that satisfactory progress is being made, the Department may reduce the total amount being retained from payment pursuant to the above requirements to 5 percent of the total estimated value of the work and materials and may also reduce the amount retained from any of the remaining partial payments to 5 percent of the estimated value of the work and materials. In addition, on any partial payment made after 95 percent of the work has been completed, the Department may reduce the amount retained from payment pursuant to the requirements of this Section 9-1.06, to such lesser amount as the Department determines is adequate security for the fulfillment of the balance of the work and other requirements of the contract, but in no event is that amount reduced to less than 125 percent of the estimated value of the work yet to be completed as determined by the Engineer. The reduction is made only upon the request of the Contractor and must be approved in writing by the surety on the performance bond and by the surety on the payment bond. The approval of the surety must be submitted to the Disbursing Officer of the Department; the signature of the person executing the approval for the surety must be properly acknowledged and the power of attorney authorizing the person to give that consent must either accompany the document or be on file with the Department. The retentions specified in this paragraph are those defined in Pub Cont Code § 7107(b).

**In Section 9-1.06 in the 4th paragraph, replace the 1st sentence with:**

The Department shall pay monthly to the Contractor, while carrying on the work, the balance not retained, as aforesaid, after deducting therefrom all previous payments and all sums to be deducted or withheld under the provisions of the contract.

**In Section 9-1.065 replace the title and the 1st and 2nd paragraphs with:**

**9-1.065 RELEASE OF RETAINED FUNDS**

The Department releases retained funds if you:

1. Request release of the retention (Pub Cont Code § 10263) in writing
2. Deposit securities equivalent to the funds you want released into escrow with the State Treasurer or with a bank acceptable to the Department
3. Are the beneficial owner of and receive interest on the deposited securities substituted for the retained funds

**In Section 9-1.07A replace the 2nd sentence with:**

The Department pays the balance due less previous payments, deductions, withholds, and retentions under the provisions of the contract and those further amounts that the Engineer determines to be necessary pending issuance of the proposed final estimate and payment thereon.

**Replace Section 9-1.07B with:**

**9-1.07B Final Payment and Claims**

After acceptance by the Director, the Engineer makes a proposed final estimate of the total amount payable to the Contractor, including an itemization of the total amount, segregated by contract item quantities, extra work, and other basis for payment, and shows each deduction made or to be made for prior payments and amounts to be deducted, withheld, or retained under the provisions of the contract. Prior estimates and payments are subject to correction in the proposed final estimate. The Contractor must submit written approval of the proposed final estimate or a written statement of claims arising under or by virtue of the contract so that the Engineer receives the written approval or statement of claims no later than close of business of the 30th day after receiving the proposed final estimate. The Contractor's receipt of the proposed final estimate must be evidenced by postal receipt. The

Engineer's receipt of the Contractor's written approval or statement of claims must be evidenced by postal receipt or the Engineer's written receipt if delivered by hand.

On the Contractor's approval, or if the Contractor files no claim within the specified period of 30 days, the Engineer will issue a final estimate in writing in conformance with the proposed final estimate submitted to the Contractor, and within 30 days thereafter the State will pay the entire sum so found to be due. That final estimate and payment thereon shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done and the compensation payable therefor, except as otherwise provided in Sections 9-1.03C, "Records," and 9-1.09, "Clerical Errors."

If the Contractor within the specified period of 30 days files claims, the Engineer will issue a semifinal estimate in conformance with the proposed final estimate submitted to the Contractor and within 30 days thereafter the State will pay the sum found to be due. The semifinal estimate and corresponding payment shall be conclusive and binding against both parties to the contract on each question relating to the amount of work done and the compensation payable therefor, except insofar as affected by the claims filed within the time and in the manner required hereunder and except as otherwise provided in Sections 9-1.03C, "Records," and 9-1.09, "Clerical Errors."

Except for claims for overhead costs and administrative disputes that occur after issuance of the proposed final estimate, the Contractor shall only provide the following two items of information for each claim:

1. The exclusive identification number that corresponds to the supporting full and final documentation of potential claim
2. The final amount of requested additional compensation

If the final amount of requested additional compensation is different than the amount of requested compensation included in the full and final documentation of potential claim, the Contractor shall provide in the written statement of claims the reasons for the changed amount, the specific provisions of the contract which support the changed amount, and a statement of the reasons the provisions support and provide a basis for the changed amount. If the Contractor's claim fails to provide an exclusive identification number or if there is a disparity in the provided exclusive identification number, the Engineer will notify the Contractor of the omission or disparity. The Contractor shall have 15 days after receiving notification from the Engineer to correct the omission or disparity. If after the 15 days has elapsed, there is still an omission or disparity of the exclusive identification number assigned to the claim, the Engineer will assign the number. No claim will be considered that has any of the following deficiencies:

1. The claim does not have the same nature, circumstances, and basis as the corresponding full and final documentation of potential claim.
2. The claim does not have a corresponding full and final documentation of potential claim.
3. The claim was not included in the written statement of claims.
4. The Contractor did not comply with applicable notice or protest requirements of Sections 4-1.03, "Changes," 5-1.116, "Differing Site Condition," 8-1.06, "Time of Completion," 8-1.07, "Liquidated Damages," 8-1.10, "Utility and Non-Highway Facilities," and 9-1.04, "Notice of Potential Claim."

Administrative disputes that occur after issuance of the proposed final estimate shall be included in the Contractor's written statement of claims in sufficient detail to enable the Engineer to ascertain the basis and amounts of those claims.

The Contractor shall keep full and complete records of the costs and additional time incurred for work for which a claim for additional compensation is made. The Engineer or designated claim investigators or auditors shall have access to those records and any other records as may be required by the Engineer to determine the facts or contentions involved in the claims. Failure to permit access to those records shall be sufficient cause for denying the claims.

The written statement of claims submitted by the Contractor shall be accompanied by a notarized certificate containing the following language:

Under the penalty of law for perjury or falsification and with specific reference to the California False Claims Act, Government Code Section 12650 et. seq., the undersigned,

\_\_\_\_\_  
(name) \_\_\_\_\_ of  
(title) \_\_\_\_\_  
(company)

hereby certifies that the claim for the additional compensation and time, if any, made herein for the work on this contract is a true statement of the actual costs incurred and time sought, and is fully documented and supported under the contract between parties.

Dated \_\_\_\_\_

/s/ \_\_\_\_\_

Subscribed and sworn before me this \_\_\_\_\_ day

of \_\_\_\_\_ .

\_\_\_\_\_  
(Notary Public)  
My Commission  
Expires \_\_\_\_\_

Failure to submit the notarized certificate will be sufficient cause for denying the claim.

Any claim for overhead, in addition to being certified as stated above, shall be supported and accompanied by an audit report of an independent Certified Public Accountant. Omission of a supporting audit report of an independent Certified Public Accountant shall result in denial of the claim and shall operate as a bar to arbitration, as to the claim, in conformance with the requirements in Section 10240.2 of the California Public Contract Code. Any claim for overhead shall be subject to audit by the State at its discretion. The costs of performing an audit examination and submitting the report shall be borne by the Contractor. The Department will deduct an offset amount for field and home office overhead paid on all added work from any claim for overhead as appropriate, as determined by the Department. The value of the added work equals the value of the work completed minus the total bid. The home office overhead offset equals 5 percent of the added work. The field office overhead offset equals 5-1/2 percent of the added work. The Certified Public Accountant's audit examination shall be performed in conformance with the requirements of the American Institute of Certified Public Accountants Attestation Standards. The audit examination and report shall depict the Contractor's project and company-wide financial records and shall specify the actual overall average daily rates for both field and home office overhead for the entire duration of the project, and whether the costs have been properly allocated. The rates of field and home office overhead shall exclude unallowable costs as determined in Title 48 of the Federal Acquisition Regulations, Chapter 1, Part 31. The audit examination and report shall determine if the rates of field and home office overhead are:

1. Allowable in conformance with the requirements in Title 48 of the Federal Acquisition Regulations, Chapter 1, Part 31.
2. Adequately supported by reliable documentation.
3. Related solely to the project under examination.

Costs or expenses incurred by the State in reviewing or auditing claims that are not supported by the Contractor's cost accounting or other records shall be deemed to be damages incurred by the State within the meaning of the California False Claims Act.

If the Engineer determines that a claim requires additional analysis, the Engineer will schedule a board of review meeting. The Contractor shall meet with the review board or person and make a presentation in support of the claim. Attendance by the Contractor at the board of review meeting shall be mandatory.

The District Director of the District that administered the contract will make the final determination of any claims which remain in dispute after completion of claim review by the Engineer or board of review meeting.

The final determination of claims will be sent to the Contractor by hand delivery or deposit in the U.S. mail. The Engineer will then make and issue the Engineer's final estimate in writing and within 30 days thereafter the State will pay the entire sum, if any, found due thereon. That final estimate shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done and the compensation payable therefor, except as otherwise provided in Sections 9-1.03C, "Records," and 9-1.09, "Clerical Errors."

Failure of the Contractor to conform to the specified dispute procedures shall constitute a failure to pursue diligently and exhaust the administrative procedures in the contract and shall operate as a bar to arbitration in conformance with the requirements in Section 10240.2 of the California Public Contract Code.

^^

**SECTION 12: CONSTRUCTION AREA TRAFFIC CONTROL DEVICES**  
**(Issued 10-06-06)**

**In Section 12-1.01 replace the 2nd paragraph with:**

Attention is directed to Part 6 of the California MUTCD. Nothing in this Section 12 is to be construed as to reduce the minimum standards in these manuals.

**Replace Section 12-2.01 with:**

**12-2.01 FLAGGERS**

Flaggers while on duty and assigned to traffic control or to give warning to the public that the highway is under construction and of any dangerous conditions to be encountered as a result thereof, shall perform their duties and shall be provided with the necessary equipment in conformance with Part 6 of the California MUTCD. The equipment shall be furnished and kept clean and in good repair by the Contractor at the Contractor's expense.

**In Section 12-3.01 replace the 1st paragraph with:**

In addition to the requirements in Part 6 of the California MUTCD, all devices used by the Contractor in the performance of the work shall conform to the provisions in this Section 12-3.

**In Section 12-3.01 replace the 5th paragraph with:**

Retroreflective sheeting shall conform to the requirements in ASTM Designation: D 4956 and to the special provisions.

**In Section 12-3.06 replace the 1st paragraph with:**

The term "Construction Area Signs" shall include all temporary signs required for the direction of public traffic through or around the work during construction. Construction area signs are shown in or referred to in Part 6 of the California MUTCD.

**In Section 12-3.06 replace the 4th paragraph with:**

All construction area signs shall conform to the dimensions, color and legend requirements of the plans, Part 6 of the California MUTCD and these specifications. All sign panels shall be the product of a commercial sign manufacturer, and shall be as specified in these specifications.

**In Section 12-3.06 replace the 8th paragraph with:**

Used signs with the specified sheeting material will be considered satisfactory if they conform to the requirements for visibility and legibility and the colors conform to the requirements in Part 6 of the California MUTCD. A significant difference between day and nighttime retroreflective color will be grounds for rejecting signs.

Section 12-3.06A, "Stationary Mounted Signs," of the Standard Specifications is amended by deleting the third, fourth, fifth, and sixth paragraphs.

^^

**SECTION 15: EXISTING HIGHWAY FACILITIES  
(Issued 11-02-04)**

**In Section 15-2.07 replace the 6th paragraph with:**

Full compensation for removing, salvaging, reconstructing, relocating or resetting end caps, return caps, terminal sections, and buried post anchors, for metal beam guard railings and three beam barriers, and for connecting reconstructed, relocated or reset railings and barriers to new and existing facilities, including connections to concrete, shall be considered as included in the contract price paid per meter for the type of railing or barrier work involved and no additional compensation will be allowed therefor.

^^

**SECTION 19: EARTHWORK  
(Issued 07-31-07)**

**In Section 19-1.02 replace the 3rd paragraph with:**

In addition to the provisions in Sections 5-1.02, "Plans and Working Drawings," and 5-1.02A, "Excavation Safety Plans," detailed plans of the protective systems for excavations on or affecting railroad property will be reviewed for adequacy of protection provided for railroad facilities, property, and traffic. These plans shall be submitted at least 9 weeks before the Contractor intends to begin excavation requiring the protective systems. Approval by the Engineer of the detailed plans for the protective systems will be contingent upon the plans being satisfactory to the railroad company involved.

**Replace Section 19-1.03 with:**

**19-1.03 GRADE TOLERANCE**

Immediately prior to placing subsequent layers of material thereon, the grading plane shall conform to one of the following:

- A. When hot mix asphalt is to be placed on the grading plane, the grading plane at any point shall not vary more than 15 mm above or below the grade established by the Engineer.
- B. When subbase or base material to be placed on the grading plane is to be paid for by the tonne, the grading plane at any point shall not vary more than 30 mm above or below the grade established by the Engineer.
- C. When the material to be placed on the grading plane is to be paid for by the cubic meter, the grading plane at any point shall be not more than 15 mm above the grade established by the Engineer.

**In Section 19-3.025C replace the 1st paragraph with:**

Cementitious material used in soil cement bedding shall conform to the provisions in Section 90-2.01, "Cementitious Materials." Supplementary cementitious material will not be required.

**In Section 19-3.025C replace the 4th paragraph with:**

The aggregate, cementitious material, and water shall be proportioned either by mass or by volume. Soil cement bedding shall contain not less than 175 kg of cementitious material per cubic meter. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed.

**In Section 19-3.062 replace the 1st paragraph with:**

Slurry cement backfill shall consist of a fluid, workable mixture of aggregate, cementitious material, and water.

**In Section 19-3.062 replace the 5th paragraph with:**

Cementitious material shall conform to the provisions in Section 90-2.01, "Cementitious Materials." Supplementary cementitious material will not be required.

**In Section 19-3.062 replace the 8th paragraph with:**

The aggregate, cementitious material, and water shall be proportioned either by mass or by volume. Slurry cement backfill shall contain not less than 110 kg of cementitious material per cubic meter. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed.

^^

**SECTION 20: EROSION CONTROL AND HIGHWAY PLANTING**  
**(Issued 08-17-07)**

**Replace Section 20-2.03 with:**

**20-2.03 SOIL AMENDMENT**

Soil amendment shall comply with the requirements in the California Food and Agricultural Code.  
Soil amendment producers shall comply with the following:

1. Be fully permitted to produce compost as specified under the California Integrated Waste Management Board, Local Enforcement Agencies and any other State and Local Agencies that regulate Solid Waste Facilities. If exempt from State permitting requirements, the composting facility must certify that it follows guidelines and procedures for production of compost meeting the environmental health standards of Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7.
2. Be a participant in United States Composting Council's Seal of Testing Assurance program.

Soil amendment shall be composted and may be derived from any single, or mixture of any of the following feedstock materials:

1. Green material consisting of chipped, shredded, or ground vegetation; or clean processed recycled wood products
2. Biosolids
3. Manure
4. Mixed food waste



Soil amendment feedstock materials shall be composted to reduce weed seeds, pathogens and deleterious materials as specified under Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3.

Soil amendment shall not be derived from mixed municipal solid waste and must be reasonably free of visible contaminants. Soil amendment must not contain paint, petroleum products, pesticides or any other chemical residues harmful to animal life or plant growth. Soil amendment must not possess objectionable odors.

Metal concentrations in soil amendment must not exceed the maximum metal concentrations listed in Title 14, California Code of Regulations, Division 7, Chapter 3.1, Section 17868.2.

Soil amendment must comply with the following:

Physical/Chemical Requirements		
Property	Test Method	Requirement
pH	*TMECC 04.11-A, Elastometric pH 1:5 Slurry Method, pH Units	6.0–8.0
Soluble Salts	TMECC 04.10-A, Electrical Conductivity 1:5 Slurry Method dS/m (mmhos/cm)	0-10.0
Moisture Content	TMECC 03.09-A, Total Solids & Moisture at 70+/- 5 deg C, % Wet Weight Basis	30–60
Organic Matter Content	TMECC 05.07-A, Loss-On-Ignition Organic Matter Method (LOI), % Dry Weight Basis	30–65
Maturity	TMECC 05.05-A, Germination and Vigor Seed Emergence Seedling Vigor % Relative to Positive Control	80 or Above 80 or Above
Stability	TMECC 05.08-B, Carbon Dioxide Evolution Rate mg CO <sub>2</sub> -C/g OM per day	8 or below
Particle Size	TMECC 02.02-B Sample Sieving for Aggregate Size Classification % Dry Weight Basis	95% Passing 5/8 inch 70% Passing 3/8 inch
Pathogen	TMECC 07.01-B, Fecal Coliform Bacteria < 1000 MPN/gram dry wt.	Pass
Pathogen	TMECC 07.01-B, Salmonella < 3 MPN/4 grams dry wt.	Pass
Physical Contaminants	TMECC 02.02-C, Man Made Inert Removal and Classification: Plastic, Glass and Metal, % > 4mm fraction	Combined Total: < 1.0
Physical Contaminants	TMECC 02.02-C, Man Made Inert Removal and Classification: Sharps (Sewing needles, straight pins and hypodermic needles), % > 4mm fraction	None Detected

\*TMECC refers to "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the United States Compost Council (USCC).

Prior to application, the Contractor shall provide the Engineer with a copy of the soil amendment producer's Compost Technical Data Sheet and a copy of the compost producers STA certification. The Compost Technical Data Sheet shall include laboratory analytical test results, directions for product use, and a list of product ingredients.

Prior to application, the Contractor shall provide the Engineer with a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

**In Section 20-2.10 delete the 8th, 9th, and 10th paragraphs.**



- 4. Sand
- 5. Up to 100 percent of any combination of processed:
  - 5.1. Asphalt concrete
  - 5.2. Portland cement concrete
  - 5.3. Lean concrete base
  - 5.4. Cement treated base

**Replace Section 25-1.02B with:**

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

- 1. Broken stone
- 2. Crushed gravel
- 3. Natural rough surfaced gravel
- 4. Sand
- 5. Up to 100 percent of any combination of processed:
  - 5.1. Asphalt concrete
  - 5.2. Portland cement concrete
  - 5.3. Lean concrete base
  - 5.4. Cement treated base

^^

**SECTION 26 AGGREGATE BASE**  
**(Issued 02-16-07)**

**In Section 26-1.02A replace the 1st paragraph with:**

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

- 1. Broken stone
- 2. Crushed gravel
- 3. Natural rough surfaced gravel
- 4. Sand
- 5. Up to 100 percent of any combination of processed:
  - 5.1. Asphalt concrete
  - 5.2. Portland cement concrete
  - 5.3. Lean concrete base
  - 5.4. Cement treated base

**In Section 26-1.02B replace the 1st paragraph with:**

Aggregate must be clean and free from organic matter and other deleterious substances. Aggregate must consist of any combination of:

- 1. Broken stone
- 2. Crushed gravel

- 3. Natural rough surfaced gravel
- 4. Sand
- 5. Up to 100 percent of any combination of processed:
  - 5.1. Asphalt concrete
  - 5.2. Portland cement concrete
  - 5.3. Lean concrete base
  - 5.4. Cement treated base

^^

**SECTION 27 CEMENT TREATED BASES  
(Issued 07-31-07)**

**In Section 27-1.02 replace the 1st paragraph with:**

Cement shall be Type II portland cement conforming to the provisions in Section 90-2.01A, "Cement."

**In Section 27-1.02 replace the 3rd and 4th paragraphs with:**

Aggregate for use in Class A cement treated base shall be of such quality that when mixed with cement in an amount not to exceed 5 percent by mass of the dry aggregate and compacted at optimum moisture content, the compressive strength of a sample of the compacted mixture shall not be less than 5.2 MPa at 7 days, when tested by California Test 312.

Aggregate for use in Class B cement treated base shall have a Resistance (R-value) of not less than 60 before mixing with cement and a Resistance (R-value) of not less than 80 after mixing with cement in an amount not to exceed 2.5 percent by mass of the dry aggregate.

**In Section 27-1.07 replace the 9th paragraph with:**

When surfacing material is hot mix asphalt, the low areas shall be filled with hot mix asphalt conforming to the requirements for the lowest layer of hot mix asphalt to be placed as surfacing. This filling shall be done as a separate operation prior to placing the lowest layer of surfacing, and full compensation for this filling will be considered as included in the contract price paid for cement treated base and no additional compensation will be allowed therefor.

^^

**SECTION 28 LEAN CONCRETE BASE  
(Issued 07-31-07)**

**In Section 28-1.02 replace the 1st paragraph with:**

Cement shall be Type II portland cement conforming to the provisions in Section 90-2.01A, "Cement."

**In Section 28-1.02 replace the 6th paragraph with:**

Aggregate shall be of such quality that, when mixed with cement in an amount not to exceed 180 kg per cubic meter, and tested in conformance with the requirements in California Test 548, the compressive strength of a sample will be not less than 5.0 MPa at 7 days.



conformance with the requirements in California Test 379. The bitumen ratio kilograms of asphalt per 100 kg of dry aggregate shall not vary by more than 0.5-kg of asphalt above or 0.5-kg of asphalt below the amount designated by the Engineer. Compliance with this requirement will be determined either by taking samples from trucks at the plant or from the mat behind the paver before rolling. If the sample is taken from the mat behind the paver, the bitumen ratio shall be not less than the amount designated by the Engineer, less 0.7-kg of asphalt per 100 kg of dry aggregate.

**In Section 29-1.04B replace the 2nd paragraph with:**

Cement treated permeable base shall contain not less than 170 kg of cement per cubic meter.

**In Section 29-1.05 replace the 1st paragraph with:**

Asphalt treated permeable base shall be spread and compacted as specified for hot mix asphalt under the "Method" construction process in Section 39, "Hot Mix Asphalt," and these specifications.

**In Section 29-1.07 replace the 2nd paragraph with:**

Hardened treated permeable base with a surface lower than 15 mm below the grade established by the Engineer shall be removed and replaced with treated permeable base which complies with these specifications, or if permitted by the Engineer, the low areas shall be filled with pavement material as follows:

1. When pavement material is hot mix asphalt, the low areas shall be filled with hot mix asphalt conforming to the requirements for the lowest layer of hot mix asphalt to be placed as pavement. This shall be done as a separate operation prior to placing the lowest layer of pavement.
2. When pavement material is portland cement concrete, the low areas shall be filled with pavement concrete at the time and in the same operation in which the pavement is placed.
3. Full compensation for filling low areas will be considered as included in the contract price paid per cubic meter for treated permeable base and no additional compensation will be allowed therefor.

^^

**SECTION 37 BITUMINOUS SEALS**  
**(Issued 08-17-07)**

**In Section 37-1.03 replace the 4th, 5th, and 6th paragraphs with:**

On 2-lane two-way roadways, W8-7 "LOOSE GRAVEL" signs and W13-1 (35) speed advisory signs shall be furnished and placed adjacent to both sides of the traveled way where screenings are being spread on a traffic lane. The first W8-7 sign in each direction shall be placed where traffic first encounters loose screenings, regardless of which lane the screenings are being spread on. The W13-1 (35) signs need not be placed in those areas with posted speed limits of less than 40 MPH. The signs shall be placed at maximum 600-m intervals along each side of the traveled way and at public roads or streets entering the seal coat area as directed by the Engineer.

On multilane roadways (freeways, expressways and multilane conventional highways) where screenings are being spread on a traffic lane, W8-7 "LOOSE GRAVEL" signs and W13-1 (35) speed advisory signs shall be furnished and placed adjacent to the outside edge of the traveled way nearest to the lane being worked on. The first W8-7 sign shall be placed where the screenings begin with respect to the direction of travel on that lane. The W13-1 (35) signs need not be placed in those areas with posted speed limits of less than 40 MPH. The signs shall be placed at maximum 600-m intervals along the edge of traveled way and at on-ramps, public roads or streets entering the seal coat area as directed by the Engineer.

The W8-7 and W13-1 signs shall be maintained in place at each location until final brooming of the seal coat surface at that location is completed. The W8-7 and W13-1 signs shall conform to the provisions for construction area signs in Section 12, "Construction Area Traffic Control Devices." The signs may be set on temporary portable supports with the W13-1 below the W8-7 or on barricades with the W13-1 sign alternating with the W8-7 sign.

**In Section 37-1.07 replace the 2nd paragraph with:**

Rollers shall be oscillating type pneumatic-tired rollers. A minimum of 2 pneumatic-tired rollers conforming to the provisions in Section 39-3.03 "Spreading and Compacting Equipment," shall be furnished.

**In Section 37-1.09 replace the 2nd paragraph with:**

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in applying seal coat, complete in place, including furnishing, placing, maintaining, and removing W8-7 and W13-1 signs, when required, and temporary supports or barricades for the signs, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

^^

**SECTION 39 HOT MIX ASPHALT  
(Issued 03-21-08)**

**Replace Section 39 with:**

**SECTION 39 HOT MIX ASPHALT**

**39-1 GENERAL**

**39-1.01 DESCRIPTION**

Section 39 includes specifications for producing and placing hot mix asphalt (HMA) by mixing aggregate and asphalt binder at a mixing plant and spreading and compacting the HMA mixture.

The special provisions specify one or more type of HMA, including:

1. Type A
2. Type B
3. Open graded friction course (OGFC). OGFC includes hot mix asphalt (open graded), rubberized hot mix asphalt (open graded) (RHMA-O) and rubberized hot mix asphalt (open graded high binder) (RHMA-O-HB)
4. Rubberized hot mix asphalt (gap graded) (RHMA-G)

The special provisions specify the HMA construction process, including:

1. Standard
2. Method
3. Quality Control / Quality Assurance (QC / QA)

**39-1.02 MATERIALS**

**39-1.02A GEOSYNTHETIC PAVEMENT INTERLAYER**

Geosynthetic pavement interlayer must comply with the specifications for pavement reinforcing fabric in Section 88, "Engineering Fabrics."

**39-1.02B TACK COAT**

Tack coat must comply with the specifications for asphaltic emulsion in Section 94, "Asphaltic Emulsion," or asphalt binder in Section 92, "Asphalts." Choose the type and grade.

**39-1.02C ASPHALT BINDER**

Asphalt binder in HMA must comply with Section 92, "Asphalts," or Section 39-1.02D, "Asphalt Rubber Binder." The special provisions specify the grade.

Asphalt binder for geosynthetic pavement interlayer must comply with Section 92, "Asphalts." Choose from Grades PG 64-10, PG 64-16, or PG 70-10.

**39-1.02D ASPHALT RUBBER BINDER**

**General**

Use asphalt rubber binder in RHMA-G, RHMA-O, and RHMA-O-HB. Asphalt rubber binder must be a combination of:

1. Asphalt binder
2. Asphalt modifier
3. Crumb rubber modifier (CRM)

The combined asphalt binder and asphalt modifier must be 80.0 ± 2.0 percent by mass of the asphalt rubber binder.

**Asphalt Modifier**

Asphalt modifier must be a resinous, high flash point, and aromatic hydrocarbon, and comply with:

**Asphalt Modifier for Asphalt Rubber Binder**

Quality Characteristic	ASTM	Specification
Viscosity, m <sup>2</sup> /s (x 10 <sup>-6</sup> ) at 100 °C	D 445	X ± 3 <sup>a</sup>
Flash Point, CL.O.C., °C	D 92	207 minimum
Molecular Analysis		
Asphaltenes, percent by mass	D 2007	0.1 maximum
Aromatics, percent by mass	D 2007	55 minimum

Note:

<sup>a</sup> The symbol "X" is the proposed asphalt modifier viscosity. "X" must be between 19 and 36. A change in "X" requires a new asphalt rubber binder design.

Asphalt modifier must be from 2.0 percent to 6.0 percent by mass of the asphalt binder in the asphalt rubber binder.

**Crumb Rubber Modifier**

CRM consists of a ground or granulated combination of scrap tire CRM and high natural CRM. CRM must be 75.0 ± 2.0 percent scrap tire CRM and 25.0 ± 2.0 percent high natural CRM by total mass of CRM. Scrap tire CRM must be from any combination of automobile tires, truck tires, or tire buffings.

Sample and test scrap tire CRM and high natural CRM separately. CRM must comply with:



### Crumb Rubber Modifier for Asphalt Rubber Binder

Quality Characteristic	Test Method	Specification
Scrap tire CRM gradation (% passing 2.36-mm sieve)	LP-10	100
High natural CRM gradation (% passing 2.00-mm sieve)	LP-10	100
Wire in CRM (% max.)	LP-10	0.01
Fabric in CRM (% max.)	LP-10	0.05
CRM particle length (mm max.) <sup>a</sup>	--	4.75
CRM specific gravity <sup>a</sup>	CT 208	1.1 – 1.2
Natural rubber content in high natural CRM (%) <sup>a</sup>	ASTM D 297	40.0 – 48.0

Note:

<sup>a</sup> Test at mix design and for Certificate of Compliance.

Only use CRM ground and granulated at ambient temperature. If steel and fiber are cryogenically separated, it must occur before grinding and granulating. Only use cryogenically produced CRM particles that can be ground or granulated and not pass through the grinder or granulator.

CRM must be dry, free-flowing particles that do not stick together. CRM must not cause foaming when combined with the asphalt binder and asphalt modifier. You may add calcium carbonate or talc up to 3 percent by mass of CRM.

#### Asphalt Rubber Binder Design and Profile

Submit in writing an asphalt rubber binder design and profile. In the design, designate the asphalt, asphalt modifier, and CRM and their proportions. The profile is not a specification and only serves to indicate expected trends in asphalt rubber binder properties during binder production. The profile must include the same component sources for the asphalt rubber binder used.

Design the asphalt rubber binder from testing you perform for each quality characteristic and for the reaction temperatures expected during production. The 24-hour (1,440-minute) interaction period determines the design profile. At a minimum, mix asphalt rubber binder components, take samples, and perform and record the following tests:

#### Asphalt Rubber Binder Reaction Design Profile

Test	Minutes of Reaction <sup>a</sup>							Limits
	45	60	90	120	240	360	1440	
Cone penetration @ 77 °F, 0.10-mm (ASTM D 217)	X <sup>b</sup>				X		X	25 - 70
Resilience @ 77 °F, percent rebound (ASTM D 5329)	X				X		X	18 min.
Field softening point, °F (ASTM D 36)	X				X		X	125 - 165
Viscosity, centipoises (LP-11)	X	X	X	X	X	X	X	1,500 - 4,000

Notes:

<sup>a</sup> Six hours (360 minutes) after CRM addition, reduce the oven temperature to 135 °C for a period of 16 hours. After the 16-hour (1320 minutes) cool-down after CRM addition, reheat the binder to the reaction temperature expected during production for sampling and testing at 24 hours (1440 minutes).

<sup>b</sup> "X" denotes required testing

#### Asphalt Rubber Binder

After interacting for a minimum of 45 minutes, asphalt rubber binder must comply with:

#### Asphalt Rubber Binder

Quality Characteristic	Test for Quality Control or Acceptance	Test Method	Specification	
			Minimum	Maximum
Cone penetration @ 77 °F, 0.10-mm	Acceptance	ASTM D 217	25	70
Resilience @ 77 °F, percent rebound	Acceptance	ASTM D 5329	18	--
Field softening point, °F	Acceptance	ASTM D 36	125	165
Viscosity @ 350 °F, centipoises	Quality Control	LP-11	1,500	4,000

### **39-1.02E AGGREGATE**

Aggregate must be clean and free from deleterious substances. Aggregate:

1. Retained on the 4.75-mm sieve is coarse
2. Passing the 4.75-mm sieve is fine
3. Added and passing the 0.6-mm sieve is supplemental fine, including:
  - 3.1. Hydrated lime
  - 3.2. Portland cement
  - 3.3. Fines from dust collectors

The special provisions specify the aggregate gradation for each HMA type.

The specified aggregate gradation is before the addition of asphalt binder and includes supplemental fines. The Engineer tests for aggregate grading under California Test 202, modified by California Test 105 if there is a difference in specific gravity of 0.2 or more between the coarse and fine parts of different aggregate blends.

Choose a sieve size target value (TV) within each target value limit presented in the aggregate gradation tables.

**Aggregate Gradation  
(Percentage Passing)  
HMA Types A and B**

19-mm HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
25-mm	100	—
19-mm	90 - 100	TV ±5
12.5-mm	70 - 90	TV ±6
4.75-mm	45 - 55	TV ±7
2.36-mm	32 - 40	TV ±5
0.6-mm	12 - 21	TV ±4
0.075-mm	2 - 7	TV ±2

12.5-mm HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
19-mm	100	—
12.5-mm	95 - 99	TV ±6
9.5-mm	75 - 95	TV ±6
4.75-mm	55 - 66	TV ±7
2.36-mm	38 - 49	TV ±5
0.6-mm	15 - 27	TV ±4
0.075-mm	2 - 8	TV ±2

9.5-mm HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
12.5-mm	100	—
9.5-mm	95 - 100	TV ±6
4.75-mm	58 - 72	TV ±7
2.36-mm	34 - 48	TV ±6
0.6-mm	18 - 32	TV ±5
0.075-mm	2 - 9	TV ±2

4.75-mm HMA Types A and B

Sieve Sizes	Target Value Limits	Allowable Tolerance
9.5-mm	100	—
4.75-mm	95 - 100	TV ±7
2.36-mm	72 - 77	TV ±7
0.6-mm	37 - 43	TV ±7
0.075-mm	2 - 12	TV ±4

### Rubberized Hot Mix Asphalt - Gap Graded (RHMA-G)

#### 19-mm RHMA-G

Sieve Sizes	Target Value Limits	Allowable Tolerance
25-mm	100	—
19-mm	95 - 100	TV ±5
12.5-mm	83 - 87	TV ±6
9.5-mm	65 - 70	TV ±6
4.75-mm	28 - 42	TV ±7
2.36-mm	14 - 22	TV ±5
0.075-mm	0 - 6	TV ±2

#### 12.5-mm RHMA-G

Sieve Sizes	Target Value Limits	Allowable Tolerance
19-mm	100	—
12.5-mm	90 - 100	TV ±6
9.5-mm	83 - 87	TV ±6
4.75-mm	28 - 42	TV ±7
2.36-mm	14 - 22	TV ±5
0.075-mm	0 - 6	TV ±2

### Open Graded Friction Course (OGFC)

#### 25-mm OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
37.5-mm	100	—
25-mm	99 - 100	TV ±5
19-mm	85 - 96	TV ±5
12.5-mm	55 - 71	TV ±6
4.75-mm	10 - 25	TV ±7
2.36-mm	6 - 16	TV ±5
0.075-mm	1 - 6	TV ±2

#### 12.5-mm OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
19-mm	100	—
12.5-mm	95 - 100	TV ±6
9.5-mm	78 - 89	TV ±6
4.75-mm	28 - 37	TV ±7
2.36-mm	7 - 18	TV ±5
0.6-mm	0 - 10	TV ±4
0.075-mm	0 - 3	TV ±2

#### 9.5-mm OGFC

Sieve Sizes	Target Value Limits	Allowable Tolerance
12.5-mm	100	—
9.5-mm	90 - 100	TV ±6
4.75-mm	29 - 36	TV ±7
2.36-mm	7 - 18	TV ±6
0.6-mm	0 - 10	TV ±5
0.075-mm	0 - 3	TV ±2

Before the addition of asphalt binder and lime treatment, aggregate must comply with:

<b>Aggregate Quality</b>					
Quality Characteristic	Test Method	HMA Type			
		A	B	RHMA-G	OGFC
Percent of crushed particles	CT 205				
Coarse aggregate (% min.)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min.) (Passing 4.75-mm sieve and retained on 2.36-mm sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (% max.)	CT 211				
Loss at 100 Rev.		12	--	12	12
Loss at 500 Rev.		45	50	40	40
Sand equivalent (min.) <sup>a</sup>	CT 217	47	42	47	--
Fine aggregate angularity (% min.) <sup>b</sup>	AASHTO T 304 Method A	45	45	45	--
Flat and elongated particles (% max. by mass @ 5:1)	ASTM D 4791	10	10	10	10
K <sub>c</sub> factor (max.)	CT 303	1.7	1.7	1.7	--
K <sub>f</sub> factor (max.)	CT 303	1.7	1.7	1.7	--

Notes:

<sup>a</sup> Reported value must be the average of 3 tests from a single sample.

<sup>b</sup> The Engineer waives this specification if HMA contains less than 10 percent of nonmanufactured sand by mass of total aggregate.

### **39-1.02F RECLAIMED ASPHALT PAVEMENT**

You may produce HMA using reclaimed asphalt pavement (RAP). HMA produced using RAP must comply with the specifications for HMA except aggregate quality specifications do not apply to RAP. You may substitute RAP aggregate for a part of the virgin aggregate in HMA in a quantity not exceeding 15 percent of the aggregate blend. Do not use RAP in OGFC and RHMA-G.

Assign the substitution rate of RAP aggregate for virgin aggregate with the job mix formula (JMF) submittal. The JMF must include the percent of RAP used. If you change your assigned RAP aggregate substitution rate by more than 5 percent (within the 15 percent limit), submit a new JMF.

Process RAP from asphalt concrete. You may process and stockpile RAP throughout the project's life. Prevent material contamination and segregation. Store RAP in stockpiles on smooth surfaces free of debris and organic material. Processed RAP stockpiles must consist only of homogeneous RAP.

### **39-1.03 HOT MIX ASPHALT MIX DESIGN REQUIREMENTS**

#### **39-1.03A GENERAL**

A mix design consists of performing California Test 367 and laboratory procedures on combinations of aggregate gradations and asphalt binder contents to determine the optimum binder content (OBC) and HMA mixture qualities. If RAP is used, use Laboratory Procedure LP-9. The result of the mix design becomes the proposed JMF.

Use Form CEM-3512 to document aggregate quality and mix design data. Use Form CEM-3511 to present the JMF.

Laboratories testing aggregate qualities and preparing the mix design and JMF must be qualified under the Department's Independent Assurance Program. Take samples under California Test 125.

The Engineer reviews the aggregate qualities, mix design, and JMF and verifies and accepts the JMF.

You may change the JMF during production. Do not use the changed JMF until the Engineer accepts it. Except when adjusting the JMF in compliance with Section 39-1.03E, "Job Mix Formula Verification," perform a new mix design and submit in writing a new JMF submittal for changing any of the following:

1. Target asphalt binder percentage
2. Asphalt binder supplier

3. Asphalt rubber binder supplier
4. Component materials used in asphalt rubber binder or percentage of any component materials
5. Combined aggregate gradation
6. Aggregate sources
7. Substitution rate for RAP aggregate of more than 5 percent
8. Any material in the JMF

For OGFC, submit in writing a complete JMF submittal except asphalt binder content. The Engineer determines the asphalt binder content under California Test 368 within 20 days of your complete JMF submittal and provides you a Form CEM-3513.

**39-1.03B HOT MIX ASPHALT FOR JOB MIX FORMULA**

Determine the proposed JMF from a mix design that complies with:

**Hot Mix Asphalt for Job Mix Formula**

Quality Characteristic	Test Method	HMA Type		
		A	B	RHMA-G
Air voids content (%)	CT 367 <sup>a</sup>	4.0	4.0	Special Provisions
Voids in mineral aggregate (% min.)	LP-2			
4.75-mm grading		17.0	17.0	--
9.5-mm grading		15.0	15.0	--
12.5-mm grading		14.0	14.0	18.0 – 23.0 <sup>b</sup>
19-mm grading	13.0	13.0	18.0 – 23.0 <sup>b</sup>	
Voids filled with asphalt (%)	LP-3			
4.75-mm grading		76.0 – 80.0	76.0 – 80.0	Note d
9.5-mm grading		73.0 – 76.0	73.0 – 76.0	
12.5-mm grading		65.0 – 75.0	65.0 – 75.0	
19-mm grading	65.0 – 75.0	65.0 – 75.0		
Dust proportion	LP-4			
4.75-mm and 9.5-mm gradings		0.9 – 2.0	0.9 – 2.0	Note d
12.5-mm and 19-mm gradings	0.6 – 1.3	0.6 – 1.3		
Stabilometer value (min.) <sup>c</sup>	CT 366			
4.75-mm and 9.5-mm gradings		30	30	--
12.5-mm and 19-mm gradings	37	35	23	

Notes:

<sup>a</sup> Calculate the air voids content of each specimen using California Test 309 and Lab Procedure LP-1. Modify California Test 367, Paragraph C5, to use the exact air voids content specified in the selection of OBC.

<sup>b</sup> Voids in mineral aggregate for RHMA-G must be within this range.

<sup>c</sup> Modify California Test 304, Part 2.B.2.c: "After compaction in the compactor, cool to 60 ± 3 °C by allowing the briquettes to cool at room temperature for 0.5-hour, then place the briquettes in the oven at 60 °C for a minimum of 2 hours and not more than 3 hours."

<sup>d</sup> Report this value in the JMF submittal.

For stability, prepare 3 briquettes separately at the proposed JMF and test for compliance. Report the average of 3 tests. Prepare new briquettes and test if the range of stability for the 3 briquettes is more than 12 points. The average air void content may vary from the specified air void content by ±0.5 percent.

You may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If you use the same briquettes and tests using bulk specific gravity fail, you may prepare 3 new briquettes and determine a new bulk specific gravity. If you choose to determine bulk specific gravity with new briquettes and your tests fail, you may not test again using the stability briquettes.

**39-1.03C JOB MIX FORMULA SUBMITTAL**

Each JMF submittal must consist of:

1. Proposed JMF on Form CEM-3511
2. Mix design documentation on Form CEM-3512 dated within 12 months of submittal
3. JMF verification on Form CEM-3513 dated within 12 months of production start, if applicable
4. Materials Safety Data Sheets (MSDS) for:
  - 4.1. Asphalt binder
  - 4.2. Base asphalt binder used in asphalt rubber binder
  - 4.3. CRM and asphalt modifier used in asphalt rubber binder
  - 4.4. Blended asphalt rubber binder mixture
  - 4.5. Supplemental fine aggregate except fines from dust collectors
  - 4.6. Antistrip additives

If the JMF must be verified or if the Engineer requests, submit samples of the following materials in labeled containers weighing no more than 22.5 kg each (notify the Engineer at least 2 business days before sampling materials):

1. Coarse, fine, and supplemental fine aggregate from stockpiles, cold feed belts, or hot bins. Samples must include at least 55 kg for each coarse aggregate, 35 kg for each fine aggregate, and 4.5 kg for each type of supplemental fines. The Department combines these aggregate samples to comply with the JMF target values submitted on Form CEM-3511.
2. RAP from stockpiles or RAP system. Samples must be at least 30 kg.
3. Asphalt binder from the binder supplier. Samples must be in two 1-liter cylindrical shaped cans with open top and friction lids.
4. Asphalt rubber binder with the components blended in the proportions to be used. Samples must be in four 1-liter cylindrical shaped cans with open top and friction lids.

#### **39-1.03D JOB MIX FORMULA REVIEW**

The Engineer reviews each mix design and proposed JMF within 5 business days from the complete JMF submittal. The review consists of reviewing the mix design procedures and comparing the proposed JMF with the specifications.

The Engineer may verify aggregate qualities during this review period.

#### **39-1.03E JOB MIX FORMULA VERIFICATION**

If you cannot submit a Department-verified JMF on Form CEM-3513 dated within 12 months before HMA production, the Engineer verifies the JMF.

Based on your testing and production experience, you may submit on Form CEM-3511 an adjusted JMF before the Engineer's verification testing. JMF adjustments may include a change in the:

1. Asphalt binder content target value up to  $\pm 0.6$  percent from the optimum binder content value submitted on Form CEM-3512 except do not adjust the target value for asphalt rubber binder for RHMA-G below 7.0 percent
2. Aggregate gradation target values within the target value limits specified in the aggregate gradation tables

Test samples from the HMA plant to be used to determine possible JMF adjustments.

For HMA Type A, Type B, and RHMA-G, the Engineer verifies the JMF from samples taken from HMA produced by the plant to be used. The Engineer verifies each proposed JMF within 20 days of receiving a complete JMF submittal and verification samples. Verification is testing for compliance with the specifications for:

1. Aggregate quality
2. Aggregate gradation (JMF TV  $\pm$  tolerance)
3. Asphalt binder content (JMF TV  $\pm$  tolerance)
4. HMA quality specified in the table Hot Mix Asphalt for Job Mix Formula except:
  - 4.1. Air voids content (design value  $\pm$  2.0 percent)
  - 4.2. Voids filled with asphalt (report only if an adjustment for asphalt binder content target value is less than  $\pm$  0.3 percent from optimum binder content)

- 4.3. Dust proportion (report only if an adjustment for asphalt binder content target value is less than  $\pm 0.3$  percent from optimum binder content)

If you request in writing, the Engineer verifies RHMA-G quality requirements within 3 business days of sampling.

In the Engineer's presence, under California Test 125, and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Sample RAP from the RAP system. Sample HMA from any of the following locations:

1. The plant
2. A truck
3. A windrow
4. Behind a paver

You may sample from a different project including a non-Department project if you make arrangements for the Engineer to be present during sampling.

For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 3 split parts to the Engineer and use 1 part for your testing.

The Engineer prepares 3 briquettes from a single split sample. To verify the JMF for stability, the Engineer tests the 3 briquettes and reports the average of 3 tests. The Engineer prepares new briquettes if the range of stability for the 3 briquettes is more than 12 points.

The Engineer may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If the Engineer uses the same briquettes and the tests using bulk specific gravity fail, the Engineer may prepare 3 new briquettes and determine a new bulk specific gravity. If the Engineer chooses to determine bulk specific gravity with new briquettes and the Engineer's tests fail, the Engineer may not test again using the stability briquettes.

If the Engineer verifies the JMF, the Engineer provides you a Form CEM-3513.

If the Engineer's tests on plant-produced samples do not verify the JMF, the Engineer notifies you in writing and you must submit a new JMF submittal or submit an adjusted JMF based on your testing. JMF adjustments may include a change in the:

1. Asphalt binder content target value up to  $\pm 0.6$  percent from the optimum binder content value submitted on Form CEM-3512 except do not adjust the target value for asphalt rubber binder for RHMA-G below 7.0 percent
2. Aggregate gradation target values within the target value limits specified in the aggregate gradation tables

You may adjust the JMF only once due to a failed verification test. An adjusted JMF requires a new Form CEM-3511 and verification of a plant-produced sample.

The Engineer re-verifies the JMF if HMA production has stopped for longer than 30 days and the verified JMF is older than 12 months.

For each HMA type and aggregate size specified, the Engineer verifies at the State's expense up to 2 proposed JMF including a JMF adjusted after verification failure. The Engineer deducts \$3,000 from payments for each verification exceeding this limit. This deduction does not apply to verifications initiated by the Engineer or if a JMF expires while HMA production is stopped longer than 30 days.

### **39-1.03F JOB MIX FORMULA ACCEPTANCE**

You may start HMA production if:

1. The Engineer's review of the JMF shows compliance with the specifications.
2. The Department has verified the JMF within 12 months before HMA production.
3. The Engineer accepts the verified JMF.



### **39-1.04 CONTRACTOR QUALITY CONTROL**

#### **39-1.04A GENERAL**

Establish, maintain, and change a quality control system to ensure materials and work comply with the specifications. Submit quality control test results to the Engineer within 3 days of a request except when QC / QA is specified.

#### **39-1.04B PREPAVING CONFERENCE**

Meet with the Engineer at a prepaving conference at a mutually agreed time and place. Discuss methods of performing the production and paving work.

#### **39-1.04C ASPHALT RUBBER BINDER**

Take asphalt rubber binder samples from the feed line connecting the asphalt rubber binder tank to the HMA plant. Sample and test asphalt rubber binder under Laboratory Procedure LP-11.

Test asphalt rubber binder for compliance with the viscosity specifications in Section 39-1.02, "Materials." During asphalt rubber binder production and HMA production using asphalt rubber binder, measure viscosity every hour with not less than 1 reading for each asphalt rubber binder batch. Log measurements with corresponding time and asphalt rubber binder temperature. Submit the log daily in writing.

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance." With the Certificate of Compliance, submit test results in writing for CRM and asphalt modifier with each truckload delivered to the HMA plant. A Certificate of Compliance for asphalt modifier must not represent more than 2250 kg. Use an AASHTO-certified laboratory for testing.

Sample and test gradation and wire and fabric content of CRM once per 4500 kg of scrap tire CRM and once per 1500 kg of high natural CRM. Sample and test scrap tire CRM and high natural CRM separately.

Submit certified weight slips in writing for the CRM and asphalt modifier furnished.

#### **39-1.04D AGGREGATE**

Determine the aggregate moisture content and RAP moisture content in continuous mixing plants at least twice a day during production and adjust the plant controller. Determine the RAP moisture content in batch mixing plants at least twice a day during production and adjust the plant controller.

#### **39-1.04E RECLAIMED ASPHALT PAVEMENT**

Perform RAP quality control testing each day.

Sample RAP once daily and determine the RAP aggregate gradation under Laboratory Procedure LP-9 and submit the results to the Engineer in writing with the combined aggregate gradation.

#### **39-1.04F CORES**

For Standard and QC / QA projects, take 100-mm or 150-mm diameter cores at least once every 5 business days. Take 1 core for every 225 tonnes of HMA from random locations the Engineer designates. Take cores in the Engineer's presence and backfill and compact holes with material authorized by the Engineer. Before submitting a core to the Engineer, mark it with the core's location and place it in a protective container.

If a core is damaged, replace it with a core taken within 0.3 m longitudinally from the original core. Relocate any core located within 0.3 m of a rumble strip to 0.3 m transversely away from the rumble strip.

#### **39-1.04G BRIQUETTES**

Prepare 3 briquettes separately for each stability determination. Report the average of 3 tests. Prepare new briquettes and test if the range of stability for the 3 briquettes is more than 12 points.

You may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If you use the same briquettes and tests using bulk specific gravity fail, you may prepare 3 new briquettes and determine a new bulk specific gravity. If you choose to determine bulk specific gravity with new briquettes and your tests fail, you may not test again using the stability briquettes.

### **39-1.05 ENGINEER'S ACCEPTANCE**

The Engineer's acceptance of HMA is specified in the sections for each HMA construction process.

The Engineer samples materials for testing under California Test 125 and the applicable test method. Sampling must be statistically-based and random.

The Engineer takes HMA and aggregate samples during production and splits each sample into 2 parts. The Engineer tests 1 part to verify quality control test results and reserves and stores the remaining part. If you request, the Engineer splits samples and provides you with a part.

The Engineer accepts HMA based on:

1. Accepted JMF
2. Accepted QCP for Standard and QC / QA
3. Compliance with the HMA Acceptance tables
4. Acceptance of a lot for QC / QA
5. Visual inspection

The Engineer prepares 3 briquettes separately for each stability determination. The Engineer reports the average of 3 tests. The Engineer prepares new briquettes and test if the range of stability for the 3 briquettes is more than 12 points.

The Engineer may use the briquettes used for stability testing to determine bulk specific gravity under CT 308. If the Engineer uses the same briquettes and the tests using bulk specific gravity fail, the Engineer may prepare 3 new briquettes and determine a new bulk specific gravity. If the Engineer chooses to determine bulk specific gravity with new briquettes and the Engineer tests fail, the Engineer may not test again using the stability briquettes.

#### **39-1.06 DISPUTE RESOLUTION**

You and the Engineer must work together to avoid potential conflicts and to resolve disputes regarding test result discrepancies. Notify the Engineer in writing within 5 days of receiving a test result if you dispute the test result.

If you or the Engineer dispute each other's test results, submit written quality control test results and copies of paperwork including worksheets used to determine the disputed test results to the Engineer. An Independent Third Party (ITP) performs referee testing. Before the ITP participates in a dispute resolution, the ITP must be accredited under the Department's Independent Assurance Program. The ITP must be independent of the project. By mutual agreement, the ITP is chosen from:

1. A Department laboratory
2. A Department laboratory in a district or region not in the district or region the project is located
3. The Transportation Laboratory
4. A laboratory not currently employed by you or your HMA producer

If split quality control or acceptance samples are not available, the ITP uses any available material representing the disputed HMA for evaluation.

#### **39-1.07 PRODUCTION START-UP EVALUATION**

The Engineer evaluates HMA production and placement at production start-up.

Within the first 680 tonnes produced on the first day of HMA production, in the Engineer's presence and from the same production run, take samples of:

1. Aggregate
2. Asphalt binder
3. RAP
4. HMA

Sample aggregate from cold feed belts or hot bins. Take RAP samples from the RAP system. Sample HMA under California Test 125. For aggregate, RAP, and HMA, split the samples into at least 4 parts and label their containers. Submit 3 split parts to the Engineer and keep 1 part.

For Standard and QC / QA projects, you and the Engineer must test the split samples for compliance with specifications. You and the Engineer must report test results in writing within 3 business days of sampling.

For Standard and QC / QA projects, take 100-mm or 150-mm diameter cores within the first 680 tonnes on the first day of HMA production. For each core, the Engineer reports the bulk specific gravity determined under California Test 308, Method A in addition to the percent of maximum theoretical density. You may test for in-place density at the core locations and include them in your production tests for percent of maximum theoretical density.

### **39-1.08 PRODUCTION**

#### **39-1.08A GENERAL**

Produce HMA in a batch mixing plant or a continuous mixing plant. Proportion aggregate by hot or cold feed control.

HMA plants must be Department-qualified. Before production, the HMA plant must have a current qualification under the Department's Materials Plant Quality Program.

During production, you may adjust:

1. Hot or cold feed proportion controls for virgin aggregate and RAP
2. The set point for asphalt binder content

#### **39-1.08B MIXING**

Mix HMA ingredients into a homogeneous mixture of coated aggregates.

Asphalt binder must be between 135 °C and 190 °C when mixed with aggregate.

Asphalt rubber binder must be between 177 °C and 218 °C when mixed with aggregate.

Aggregate must not be more than 163 °C when mixed with asphalt binder. Aggregate temperature specifications do not apply when you use RAP.

HMA with or without RAP must not be more than 163 °C.

#### **39-1.08C ASPHALT RUBBER BINDER**

Deliver scrap tire CRM and high natural CRM in separate bags.

Either proportion and mix asphalt binder, asphalt modifier, and CRM simultaneously or premix the asphalt binder and asphalt modifier before adding CRM. If you premix asphalt binder and asphalt modifier, the asphalt binder must be between 177 °C and 218 °C when you add asphalt modifier. Mix them for at least 20 minutes. When you add CRM, the asphalt binder and asphalt modifier must be between 177 °C and 218 °C.

Do not use asphalt rubber binder during the first 45 minutes of the reaction period. During this period, the asphalt rubber binder mixture must be between 177 °C and the lower of 218 °C or 6 °C below the asphalt binder's flash point indicated in the MSDS.

If any asphalt rubber binder is not used within 4 hours after the reaction period, discontinue heating. If the asphalt rubber binder drops below 177 °C, reheat before use. If you add more scrap tire CRM to the reheated asphalt rubber binder, the binder must undergo a 45-minute reaction period. The added scrap tire CRM must not exceed 10 percent of the total asphalt rubber binder mass. Reheated and reacted asphalt rubber binder must comply with the viscosity specifications for asphalt rubber binder in Section 39-1.02, "Materials." Do not reheat asphalt rubber binder more than twice.

### **39-1.09 SUBGRADE, TACK COAT, AND GEOSYNTHETIC PAVEMENT INTERLAYER**

#### **39-1.09A GENERAL**

Prepare subgrade or apply tack coat to surfaces receiving HMA. If specified, place geosynthetic pavement interlayer over a coat of asphalt binder.

#### **39-1.09B SUBGRADE**

Subgrade to receive HMA must comply with the compaction and elevation tolerance specifications in the sections for the material involved. Subgrade must be free of loose and extraneous material. If HMA is paved on existing base or pavement, remove loose paving particles, dirt, and other extraneous material by any means including flushing and sweeping.

#### **39-1.09C TACK COAT**

Apply tack coat:

1. To existing pavement including planed surfaces
2. Between HMA layers
3. To vertical surfaces of:
  - 3.1. Curbs
  - 3.2. Gutters
  - 3.3. Construction joints

Before placing HMA, apply tack coat in 1 application at the minimum residual rate specified for the condition of the underlying surface:

**Tack Coat Application Rates for HMA Type A, Type B, and RHMA-G**

HMA Overlay over:	Minimum Residual Rates (liters per square meter)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h Asphaltic Emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 Asphaltic Emulsion	Asphalt Binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h Asphaltic Emulsion
New HMA (between layers)	0.09	0.14	0.09
Existing AC and PCC pavement	0.14	0.18	0.14
Planed pavement	0.23	0.27	0.18

**Tack Coat Application Rates for OGFC**

OGFC over:	Minimum Residual Rates (liters per square meter)		
	CSS1/CSS1h, SS1/SS1h and QS1h/CQS1h Asphaltic Emulsion	CRS1/CRS2, RS1/RS2 and QS1/CQS1 Asphaltic Emulsion	Asphalt Binder and PMRS2/PMCRS2 and PMRS2h/PMCRS2h Asphaltic Emulsion
New HMA	0.14	0.18	0.14
Existing AC and PCC pavement	0.23	0.27	0.18
Planed pavement	0.27	0.32	0.23

Apply to vertical surfaces with a residual tack coat rate that will thoroughly coat the vertical face without running off.

If you request in writing and the Engineer authorizes, you may change tack coat rates.

Immediately in advance of placing HMA, apply additional tack coat to damaged areas or where loose or extraneous material is removed.

Close areas receiving tack coat to traffic. Do not track tack coat onto pavement surfaces beyond the job site.

Asphalt binder tack coat must be between 140 °C and 175 °C when applied.

**39-1.09D GEOSYNTHETIC PAVEMENT INTERLAYER**

Before placing the geosynthetic pavement interlayer and asphalt binder:

1. Repair cracks 6 mm and wider, spalls, and holes in the pavement. The State pays for this repair work under Section 4-1.03D, "Extra Work."
2. Clean the pavement of loose and extraneous material.

Immediately before placing the interlayer, apply 1.13 liter ± 0.14 liter of asphalt binder per square meter of interlayer or until the fabric is saturated. Apply asphalt binder the width of the geosynthetic pavement interlayer plus 75 mm on each side. At interlayer overlaps, apply asphalt binder on the lower interlayer the same overlap distance as the upper interlayer.

Align and place the interlayer with no overlapping wrinkles, except a wrinkle that overlaps may remain if it is less than 12.5 mm thick. If the overlapping wrinkle is more than 12.5 mm thick, cut the wrinkle out and overlap the interlayer no more than 50 mm.

The minimum HMA thickness over the interlayer must be 35 mm thick including conform tapers. Do not place the interlayer on a wet or frozen surface.

Overlap the interlayer borders between 50 mm and 100 mm. In the direction of paving, overlap the following roll with the preceding roll at any break.

You may use rolling equipment to correct distortions or wrinkles in the interlayer.

If asphalt binder tracked onto the interlayer or brought to the surface by construction equipment causes interlayer displacement, cover it with a small quantity of HMA.

Before placing HMA on the interlayer, do not expose the interlayer to:

1. Traffic except for crossings under traffic control and only after you place a small HMA quantity
2. Sharp turns from construction equipment
3. Damaging elements

Pave HMA on the interlayer during the same work shift.

### **39-1.10 SPREADING AND COMPACTING EQUIPMENT**

Paving equipment for spreading must be:

1. Self-propelled
2. Mechanical
3. Equipped with a screed or strike-off assembly that can distribute HMA the full width of a traffic lane
4. Equipped with a full-width compacting device
5. Equipped with automatic screed controls and sensing devices that control the thickness, longitudinal grade, and transverse screed slope

Install and maintain grade and slope references.

The screed must produce a uniform HMA surface texture without tearing, shoving, or gouging.

The paver must not leave marks such as ridges and indentations unless you can eliminate them by rolling.

Rollers must be equipped with a system that prevents HMA from sticking to the wheels. You may use a parting agent that does not damage the HMA or impede the bonding of layers.

In areas inaccessible to spreading and compacting equipment:

1. Spread the HMA by any means to obtain the specified lines, grades and cross sections.
2. Use a pneumatic tamper, plate compactor, or equivalent to achieve thorough compaction.

### **39-1.11 TRANSPORTING, SPREADING, AND COMPACTING**

Do not pave HMA on a wet pavement or frozen surface.

You may deposit HMA in a windrow and load it in the paver if:

1. Paver is equipped with a hopper that automatically feeds the screed
2. Loading equipment can pick up the windrowed material and deposit it in the paver hopper without damaging base material
3. Activities for deposit, pick-up, loading, and paving are continuous
4. HMA temperature in the windrow does not fall below 127 °C

You may pave HMA in 1 or more layers on areas less than 1.5 m wide and outside the traveled way including shoulders. You may use mechanical equipment other than a paver for these areas. The equipment must produce a uniform smoothness and texture.

HMA handled, spread, or windrowed must not stain the finished surface of any improvement including pavement.

Do not use petroleum products such as kerosene or diesel fuel to release HMA from trucks, spreaders, or compactors.

HMA must be free of:

1. Segregation
2. Coarse or fine aggregate pockets

### 3. Hardened lumps

Longitudinal joints in the top layer must match specified lane edges. Alternate longitudinal joint offsets in lower layers at least 0.15 m from each side of the specified lane edges. You may request in writing other longitudinal joint placement patterns.

Until the adjoining through lane's top layer has been paved, do not pave the top layer of:

1. Shoulders
2. Tapers
3. Transitions
4. Road connections
5. Private drives
6. Curve widenings
7. Chain control lanes
8. Turnouts
9. Left turn pockets

If the number of lanes change, pave each through lane's top layer before paving a changing lane's top layer. Simultaneous to paving a through lane's top layer, you may pave an adjoining area's top layer including shoulders. Do not operate spreading equipment on any area's top layer until completing final compaction.

If HMA (leveling) is specified, fill and level irregularities and ruts with HMA before spreading HMA over base, existing surfaces, or bridge decks. You may use mechanical equipment other than a paver for these areas. The equipment must produce a uniform smoothness and texture. HMA used to change an existing surface's cross slope or profile is not HMA (leveling).

If placing HMA against the edge of existing pavement, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material without damaging the surface remaining in place. If placing HMA against the edge of a longitudinal or transverse construction joint and the joint is damaged or not placed to a neat line, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material without damaging the surface remaining in place. Repair or remove and replace damaged pavement at your expense.

Rolling must leave the completed surface compacted and smooth without tearing, cracking, or shoving. Complete finish rolling activities before the pavement surface temperature is:

1. Below 65 °C for HMA with unmodified binder
2. Below 60 °C for HMA with modified binder
3. Below 93 °C for RHMA-G

If a vibratory roller is used as a finish roller, turn the vibrator off.

Do not use a pneumatic tired roller to compact RHMA-G.

For Standard and QC/QA, if a 19-mm aggregate grading is specified, you may use a 12.5-mm aggregate grading if the total layer thickness is between 38 mm and 60 mm thick.

Spread and compact HMA under Section 39-3.03, "Spreading and Compacting Equipment," and Section 39-3.04, "Transporting, Spreading, and Compacting," if either:

1. Total paved thickness is less than 45 mm.
2. Total paved thickness is less than 60 mm and a 19-mm aggregate grading is specified and used.
3. You spread and compact at:
  - 3.1. Asphalt concrete surfacing replacement areas
  - 3.2. Leveling courses
  - 3.3. Detours not included in the final roadway prism
  - 3.4. Areas the Engineer determines conventional compaction and compaction measurement methods are impeded

Do not allow traffic on new HMA pavement until its mid-depth temperature is below 71 °C.

If you request in writing and the Engineer authorizes, you may cool HMA Type A and Type B with water when rolling activities are complete. Apply water under Section 17, "Watering."

Spread sand at a rate between 0.5 kg and 1 kg per square meter on new RHMA-G, RHMA-O, and RHMA-O-HB pavement when finish rolling is complete. Sand must be free of clay or organic matter. Sand must comply with Section 90-3.03, "Fine Aggregate Grading." Keep traffic off the pavement until spreading sand is complete.

### **39-1.12 SMOOTHNESS**

#### **39-1.12A GENERAL**

Determine HMA smoothness with a profilograph and a straightedge.

Smoothness specifications do not apply to OGFC placed on existing pavement not constructed under the same project.

If portland cement concrete is placed on HMA:

1. Cold plane the HMA finished surface to within specified tolerances if it is higher than the grade specified by the Engineer.
2. Remove and replace HMA if the finished surface is lower than 15 mm below the grade specified by the Engineer.

#### **39-1.12B STRAIGHTEDGE**

The HMA pavement top layer must not vary from the lower edge of a 3.66-m long straightedge:

1. More than 3 mm when the straight edge is laid parallel with the centerline
2. More than 6 mm when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. More than 6 mm when the straightedge is laid within 7.3 m of a pavement conform

#### **39-1.12C PROFILOGRAPH**

Under California Test 526, determine the zero (null) blanking band Profile Index ( $PI_0$ ) and must-grinds on the top layer of HMA Type A, Type B, and RHMA-G pavement. Take 2 profiles within each traffic lane, 3 feet from and parallel with the edge of each lane.

A must-grind is a deviation of 1 m or more in a length of 7.5 m. You must correct must-grinds.

For OGFC, only determine must-grinds when placed over HMA constructed under the same project. The top layer of the underlying HMA must comply with the smoothness specifications before placing OGFC.

Profile pavement in the Engineer's presence. Choose the time of profiling.

On tangents and horizontal curves with a centerline radius of curvature 600 m or more, the  $PI_0$  must be at most 75 mm per 160-m section.

On horizontal curves with a centerline radius of curvature between 300 m and 600 m including pavement within the superelevation transitions, the  $PI_0$  must be at most 150 mm per 160-m section.

Before the Engineer accepts HMA pavement for smoothness, submit written final profilograms.

Submit 1 electronic copy of profile information in Microsoft Excel and 1 electronic copy of longitudinal pavement profiles in ".erd" format or other ProVAL compatible format to the Engineer and to:

Smoothness@dot.ca.gov

The following HMA pavement areas do not require a  $PI_0$ . You must measure these areas with a 3.6-m straightedge and determine must-grinds with a profilograph:

1. New HMA with a total thickness less than or equal to 75 mm
2. HMA sections of city or county streets and roads, turn lanes and collector lanes that are less than 460 m in length

The following HMA pavement areas do not require a  $PI_0$ . You must measure these areas with a 3.6-m straightedge:

1. Horizontal curves with a centerline radius of curvature less than 300 m including pavement within the superelevation transitions of those curves
2. Within 3.66 m of a transverse joint separating the pavement from:

- 2.1. Existing pavement not constructed under the same project
- 2.2. A bridge deck or approach slab
3. Exit ramp termini, truck weigh stations, and weigh-in-motion areas
4. If steep grades and superelevation rates greater than 6 percent are present on:
  - 4.1. Ramps
  - 4.2. Connectors
5. Turn lanes and areas around manholes or drainage transitions
6. Acceleration and deceleration lanes for at-grade intersections
7. Shoulders and miscellaneous areas
8. HMA pavement within 1 m from and parallel to the construction joints formed between curbs, gutters, or existing pavement

### **39-1.12D SMOOTHNESS CORRECTION**

If the top layer of HMA Type A, Type B, or RHMA-G pavement does not comply with the smoothness specifications, grind the pavement to within tolerances, remove and replace it, or place an overlay of HMA. The Engineer must authorize your choice of correction before the work begins.

Remove and replace the areas of OGFC not in compliance with the must-grind and straightedge specifications, except you may grind OGFC for correcting smoothness:

1. At a transverse joint separating the pavement from pavement not constructed under the same project
2. Within 3.66 m of a transverse joint separating the pavement from a bridge deck or approach slab

Corrected HMA pavement areas must be uniform rectangles with edges:

1. Parallel to the nearest HMA pavement edge or lane line
2. Perpendicular to the pavement centerline

After correcting for smoothness, measure the corrected HMA pavement surface with a profilograph and a 3.66-m straightedge until the pavement is within specified tolerances. If a must-grind area or straightedged pavement cannot be corrected to within specified tolerances, remove and replace the pavement.

On ground areas not overlaid with OGFC, apply fog seal coat under Section 37-1, "Seal Coats."

### **39-1.13 MISCELLANEOUS AREAS AND DIKES**

Miscellaneous areas are outside the traveled way and include:

1. Median areas not including inside shoulders
2. Island areas
3. Sidewalks
4. Gutters
5. Gutter flares
6. Ditches
7. Overside drains
8. Aprons at the ends of drainage structures

Spread miscellaneous areas in 1 layer and compact to the specified lines and grades.

For miscellaneous areas and dikes:

1. Do not submit a JMF.
2. Choose the 9.5-mm or 12.5-mm HMA Type A and Type B aggregate gradations.
3. Minimum asphalt binder content must be 6.8 percent for 9.5-mm aggregate and 6.0 percent for 12.5-mm aggregate. If you request in writing and the Engineer authorizes, you may reduce the minimum asphalt binder content.
4. Choose asphalt binder Grade PG 70-10 or the same grade specified for HMA.



### **39-1.14 SHOULDER RUMBLE STRIP**

Construct shoulder rumble strips by rolling or grinding indentations in the top layer of new HMA surfacing.

Select the method and equipment for constructing ground-in indentations.

Do not construct shoulder rumble strips on structures or approach slabs.

Construct rumble strips within 50 mm of the specified alignment. Roller or grinding equipment must be equipped with a sighting device enabling the operator to maintain the rumble strip alignment.

Rolled-in indentations must not vary from the specified dimensions by more than 10 percent.

Ground-in indentations must comply with the specified dimensions within 1.5 mm in depth or 10 percent in length and width.

The Engineer orders grinding or removal and replacement of noncompliant rumble strips to bring them within specified tolerances. Ground surface areas must be neat and uniform in appearance.

The grinding equipment must be equipped with a vacuum attachment to remove residue.

Dispose of removed material under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way."

On ground areas, apply fog seal coat under Section 37-1, "Seal Coats."

## **39-2 STANDARD**

### **39-2.01 DESCRIPTION**

If HMA is specified as Standard, construct it under Section 39-1, "General," this Section 39-2, "Standard," and Section 39-5, "Measurement and Payment."

### **39-2.02 CONTRACTOR QUALITY CONTROL**

#### **39-2.02A QUALITY CONTROL PLAN**

Establish, implement, and maintain a Quality Control Plan (QCP) for HMA. The QCP must describe the organization and procedures you will use to:

1. Control the quality characteristics
2. Determine when corrective actions are needed (action limits)
3. Implement corrective actions

When you submit the proposed JMF, submit the written QCP. You and the Engineer must discuss the QCP during the paving conference.

The QCP must address the elements affecting HMA quality including:

1. Aggregate
2. Asphalt binder
3. Additives
4. Production
5. Paving

#### **39-2.02B QUALITY CONTROL TESTING**

Perform sampling and testing at the specified frequency for the following quality characteristics:

**Minimum Quality Control – Standard**

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	HMA Type			
			A	B	RHMA-G	OGFC
Aggregate gradation <sup>a</sup>	CT 202	1 per 680 tonnes and any remaining part	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>
Sand equivalent (min.) <sup>c</sup>	CT 217		47	42	47	--
Asphalt binder content (%)	CT 379 or 382		JMF ± 0.45	JMF ± 0.45	JMF ± 0.50	JMF +0.50 -0.70
HMA moisture content (% max.)	CT 226 or CT 370	1 per 2250 tonnes but not less than 1 per paving day	1.0	1.0	1.0	1.0
Percent of maximum theoretical density (%) <sup>d, e</sup>	Quality control plan	2 per business day (min.)	91 - 97	91 - 97	91 - 97	--
Stabilometer value (min.) <sup>c, f</sup> 4.75-mm and 9.5-mm gradings 12.5-mm and 19-mm gradings	CT 366	One per 3600 tonnes or 2 per 5 business days, whichever is more	30	30	--	--
			37	35	23	--
Air voids content (%) <sup>c, g</sup>	CT 367		4 ± 2	4 ± 2	Specification ± 2	--
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants <sup>h</sup>	CT 226 or CT 370	2 per day during production	--	--	--	--
Percent of crushed particles coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min) (Passing 4.75-mm sieve and retained on 2.36-mm sieve.) One fractured face	CT 205	As necessary and designated in the QCP. At least once per project	90	25	--	90
			75	--	90	75
			70	20	70	90

Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.	CT 211		12 45	-- 50	12 40	12 40
Fine aggregate angularity (% min.)	AASHTO T 304, Method A		Report only	Report only	Report only	--
Flat and elongated particles (% max. by mass @ 5:1)	ASTM D 4791		Report only	Report only	Report only	Report only
Voids filled with asphalt (%) <sup>i</sup> 4.75-mm grading 9.5-mm grading 12.5-mm grading 19-mm grading	LP-3		76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	Report only	--
Voids in mineral aggregate (% min.) <sup>i</sup> 4.75-mm grading 9.5-mm grading 12.5-mm grading 19-mm grading	LP-2		17.0 15.0 14.0 13.0	17.0 15.0 14.0 13.0	-- -- 18.0 – 23.0 <sup>j</sup> 18.0 – 23.0 <sup>j</sup>	--
Dust proportion <sup>1</sup> 4.75-mm and 9.5-mm gradings 12.5-mm and 19-mm gradings	LP-4		0.9 – 2.0 0.6 – 1.3	0.9 – 2.0 0.6 – 1.3	Report only	--
Smoothness	Section 39-1.12	--	3.66-m straightedge, must-grind, and PI <sub>0</sub>	3.66-m straightedge, must-grind, and PI <sub>0</sub>	3.66-m straightedge, must-grind, and PI <sub>0</sub>	3.66-m straightedge and must-grind
Asphalt rubber binder viscosity @ 177 °C, centipoises	Section 39-1.02D	--	--	--	1,500 – 4,000	1,500 – 4,000
Crumb rubber modifier	Section 39-1.02D	--	--	--	Section 39-1.02D	Section 39-1.02D

Notes:

<sup>a</sup> Determine combined aggregate gradation containing RAP under Laboratory Procedure LP-9.

<sup>b</sup> The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

<sup>c</sup> Report the average of 3 tests from a single split sample.

<sup>d</sup> Required for HMA Type A, Type B, and RHMA-G if the total paved thickness is at least 45 mm.

<sup>e</sup> Determine maximum theoretical density (California Test 309) at the frequency specified for Test Maximum Density under California Test 375, Part 5.D.

<sup>f</sup> Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 60 °C ± 3 °C by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 69 °C for a minimum of 2 hours and not more than 3 hours."

<sup>g</sup> Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

<sup>h</sup> For adjusting the plant controller at the HMA plant.

<sup>1</sup> Report only if the adjustment for asphalt binder content target value is less than ± 0.3 percent from OBC.

<sup>j</sup> Voids in mineral aggregate for RHMA-G must be within this range.

For any single quality characteristic except smoothness, if 2 consecutive quality control test results do not comply with the action limits or specifications:

1. Stop production.

2. Notify the Engineer in writing.
3. Take corrective action.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

### **39-2.03 ENGINEER'S ACCEPTANCE**

#### **39-2.03A TESTING**

The Engineer samples for acceptance testing and tests for:

**HMA Acceptance - Standard**

Quality Characteristic	Test Method	HMA Type						
		A	B	RHMA-G	OGFC			
Aggregate gradation <sup>a</sup>		CT 202	JMF ± Tolerance <sup>c</sup>	JMF ± Tolerance <sup>c</sup>	JMF ± Tolerance <sup>c</sup>	JMF ± Tolerance <sup>c</sup>		
Sieve	19 mm						12.5 mm	9.5 mm
12.5-mm	X <sup>b</sup>							
9.5-mm							X	
4.75-mm								X
2.36-mm	X						X	X
0.075-mm	X	X	X					
Sand equivalent (min.) <sup>d</sup>	CT 217	47	42	47	--			
Asphalt binder content (%)	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.5	JMF +0.50 -0.70			
HMA moisture content (% max.)	CT 226 or CT 370	1.0	1.0	1.0	1.0			
Percent of maximum theoretical density (%) <sup>e, f</sup>	CT 375	91 – 97	91 – 97	91 – 97	--			
Stabilometer value (min.) <sup>d, g</sup> 4.75-mm and 9.5-mm gradings	CT 366	30	30	--	--			
		12.5-mm and 19-mm gradings	37	35	23	--		
Air voids content (%) <sup>d, h</sup>	CT 367	4 ± 2	4 ± 2	Specification ± 2	--			
Percent of crushed particles Coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min.) (Passing 4.75-mm sieve and retained on 2.36-mm sieve.) One fractured face	CT 205	90	25	--	90			
		75	--	90	75			
		70	20	70	90			
Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.	CT 211	12	--	12	12			
		45	50	40	40			
Fine aggregate angularity (% min.)	AASHTO T 304, Method A	Report only	Report only	Report only	--			
Flat and elongated particles (%, max. by mass @ 5:1)	ASTM D 4791	Report only	Report only	Report only	Report only			
Voids filled with asphalt (%) <sup>i</sup> 4.75-mm grading 9.5-mm grading 12.5-mm grading 19-mm grading	LP-3	76.0 – 80.0	76.0 – 80.0	Report only	--			
		73.0 – 76.0	73.0 – 76.0					
		65.0 – 75.0	65.0 – 75.0					
		65.0 – 75.0	65.0 – 75.0					
Voids in mineral aggregate (% min.) <sup>i</sup> 4.75-mm grading 9.5-mm grading	LP-2	17.0	17.0	--	--			
		15.0	15.0	--	--			

12.5-mm grading 19-mm grading		14.0 13.0	14.0 13.0	18.0 – 23.0 <sup>j</sup> 18.0 – 23.0 <sup>j</sup>	
Dust proportion <sup>i</sup> 4.75-mm and 9.5-mm gradings 12.5-mm and 19-mm gradings	LP-4	0.9 – 2.0 0.6 – 1.3	0.9 – 2.0 0.6 – 1.3	Report only	--
Smoothness	Section 39-1.12	3.66-m straightedge, must-grind, and PI <sub>0</sub>	3.66-m straightedge, must-grind, and PI <sub>0</sub>	3.66-m straightedge, must-grind, and PI <sub>0</sub>	3.66-m straightedge and must-grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92
Asphalt rubber binder	Various	--	--	Section 92-1.02(C) and Section 39-1.02D	Section 92-1.02(C) and Section 39-1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D

<sup>a</sup> The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.

<sup>b</sup> "X" denotes the sieves the Engineer considers for the specified aggregate gradation.

<sup>c</sup> The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

<sup>d</sup> The Engineer reports the average of 3 tests from a single split sample.

<sup>e</sup> The Engineer determines percent of maximum theoretical density if the total paved thickness is at least 45 mm under California Test 375 except the Engineer uses:

1. California Test 308, Method A, to determine in-place density of each core instead of using the nuclear gauge in Part 4, "Determining In-Place Density By The Nuclear Density Device."
2. California Test 309 to determine maximum theoretical density instead of calculating test maximum density in Part 5, "Determining Test Maximum Density."

<sup>f</sup> The Engineer determines maximum theoretical density (California Test 309) at the frequency specified for Test Maximum Density under California Test 375, Part 5.D.

<sup>g</sup> Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 60 °C ± 3 °C by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 60 °C for a minimum of 2 hours and not more than 3 hours."

<sup>h</sup> The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

<sup>i</sup> Report only if the adjustment for asphalt binder content target value is less than ± 0.3 percent from OBC.

<sup>j</sup> Voids in mineral aggregate for RHMA-G must be within this range.

No single test result may represent more than the smaller of 680 tonnes or 1 day's production.

For any single quality characteristic except smoothness, if 2 consecutive acceptance test results do not comply with the specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

The Engineer tests the core you take from each 225 tonnes of HMA production. The Engineer determines the percent of maximum theoretical density for each core by determining the core's density and dividing by the maximum theoretical density.

If the total paved thickness is at least 45 mm and any layer is less than 45 mm, the Engineer determines the percent of maximum theoretical density from cores taken from the final layer measured the full depth of the total paved HMA thickness.

For percent of maximum theoretical density, the Engineer determines a deduction for each test result outside the specifications in compliance with:

**Reduced Payment Factors for Percent of Maximum Theoretical Density**

HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor	HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor
91.0	0.0000	97.0	0.0000
90.9	0.0125	97.1	0.0125
90.8	0.0250	97.2	0.0250
90.7	0.0375	97.3	0.0375
90.6	0.0500	97.4	0.0500
90.5	0.0625	97.5	0.0625
90.4	0.0750	97.6	0.0750
90.3	0.0875	97.7	0.0875
90.2	0.1000	97.8	0.1000
90.1	0.1125	97.9	0.1125
90.0	0.1250	98.0	0.1250
89.9	0.1375	98.1	0.1375
89.8	0.1500	98.2	0.1500
89.7	0.1625	98.3	0.1625
89.6	0.1750	98.4	0.1750
89.5	0.1875	98.5	0.1875
89.4	0.2000	98.6	0.2000
89.3	0.2125	98.7	0.2125
89.2	0.2250	98.8	0.2250
89.1	0.2375	98.9	0.2375
89.0	0.2500	99.0	0.2500
< 89.0	Remove and Replace	> 99.0	Remove and Replace

**39-2.04 TRANSPORTING, SPREADING, AND COMPACTING**

Determine the number of rollers needed to obtain the specified density and surface finish.

**39-3 METHOD**

**39-3.01 DESCRIPTION**

If HMA is specified as Method, construct it under Section 39-1, "General," this Section 39-3, "Method," and Section 39-5, "Measurement and Payment."

**39-3.02 ENGINEER'S ACCEPTANCE**

**39-3.02A TESTING**

The Engineer samples for acceptance testing and tests for:

**HMA Acceptance - Method**

Quality Characteristic	Test Method	HMA Type				
		A	B	RHMA-G	OGFC	
Aggregate gradation <sup>a</sup>	CT 202	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>	
Sand equivalent (min.) <sup>c</sup>	CT 217	47	42	47	--	
Asphalt binder content (%)	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.5	JMF +0.50 -0.70	
HMA moisture content (% max.)	CT 226 or CT 370	1.0	1.0	1.0	1.0	
Stabilometer value (min.) <sup>c, d</sup>	CT 366	4.75-mm and 9.5-mm gradings	30	30	--	--
		12.5-mm and 19-mm gradings	37	35	23	--
Percent of crushed particles Coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min) (Passing 4.75-mm sieve and retained on 2.36-mm sieve.) One fractured face	CT 205	One fractured face	90	25	--	90
		Two fractured faces	75	--	90	75
		One fractured face	70	20	70	90
Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.	CT 211	Loss at 100 rev.	12	--	12	12
		Loss at 500 rev.	45	50	40	40
Air voids content (%) <sup>c, e</sup>	CT 367	4 ± 2	4 ± 2	Specification ± 2	--	
Fine aggregate angularity (% min.)	AASHTO T 304, Method A	Report only	Report only	Report only	--	
Flat and elongated particles (% max. by mass @ 5:1)	ASTM D 4791	Report only	Report only	Report only	Report only	
Voids filled with asphalt (%) <sup>f</sup> 4.75-mm grading 9.5-mm grading 12.5-mm grading 19-mm grading	LP-3	4.75-mm grading	76.0 – 80.0	76.0 – 80.0	Report only	--
		9.5-mm grading	73.0 – 76.0	73.0 – 76.0		
		12.5-mm grading	65.0 – 75.0	65.0 – 75.0		
		19-mm grading	65.0 – 75.0	65.0 – 75.0		
Voids in mineral aggregate (% min.) <sup>f</sup> 4.75-mm grading 9.5-mm grading 12.5-mm grading 19-mm grading	LP-2	4.75-mm grading	17.0	17.0	--	--
		9.5-mm grading	15.0	15.0	--	
		12.5-mm grading	14.0	14.0	18.0 – 23.0 <sup>g</sup>	
		19-mm grading	13.0	13.0	18.0 – 23.0 <sup>g</sup>	
Dust proportion <sup>f</sup> 4.75-mm and 9.5-mm gradings 12.5-mm and 19-mm gradings	LP-4	4.75-mm and 9.5-mm gradings	0.9 – 2.0	0.9 – 2.0	Report only	--
		12.5-mm and 19-mm gradings	0.6 – 1.3	0.6 – 1.3		
Smoothness	Section	3.66-m	3.66-m	3.66-m	3.66-m	



	39-1.12	straightedge and must-grind	straightedge and must-grind	straightedge and must-grind	straightedge and must-grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92
Asphalt rubber binder	Various	--	--	Section 92-1.02(C) and Section 39-1.02D	Section 92-1.02(C) and Section 39-1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
Crumb rubber modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D

<sup>a</sup>The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.

<sup>b</sup>The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

<sup>c</sup>The Engineer reports the average of 3 tests from a single split sample.

<sup>d</sup>Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 60 °C ± 3 °C by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 60 °C for a minimum of 2 hours and not more than 3 hours."

<sup>e</sup>The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

<sup>f</sup>Report only if the adjustment for asphalt binder content target value is less than ± 0.3 percent from OBC.

<sup>g</sup>Voids in mineral aggregate for RHMA-G must be within this range.

No single test result may represent more than the smaller of 680 tonnes or 1 day's production.

For any single quality characteristic except smoothness, if 2 consecutive acceptance test results do not comply with the specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

### 39-3.03 SPREADING AND COMPACTING EQUIPMENT

Each paver spreading HMA Type A and Type B must be followed by 3 rollers:

1. One vibratory roller specifically designed to compact HMA. The roller must be capable of at least 2,500 vibrations per minute and must be equipped with amplitude and frequency controls. The roller's gross static mass must be at least 6.8 tonnes.
2. One oscillating type pneumatic-tired roller at least 1.2 m wide. Pneumatic tires must be of equal size, diameter, type, and ply. The tires must be inflated to 415 kilopascals minimum and maintained so that the air pressure does not vary more than 35 kilopascals.
3. One steel-tired, 2-axle tandem roller. The roller's gross static mass must be at least 6.8 tonnes.

Each roller must have a separate operator. Rollers must be self-propelled and reversible.

Compact RHMA-G under the specifications for compacting HMA Type A and Type B except do not use pneumatic-tired rollers.

Compact OGFC with steel-tired, 2-axle tandem rollers. If placing over 272 tonnes of OGFC per hour, use at least 3 rollers for each paver. If placing less than 272 tonnes of OGFC per hour, use at least 2 rollers for each paver. Each roller must weigh between 2250 kilograms to 3075 kilograms per linear meter of drum width. Turn the vibrator off.

### 39-3.04 TRANSPORTING, SPREADING, AND COMPACTING

Pave HMA in maximum 75-mm thick compacted layers.

If the surface to be paved is both in sunlight and shade, pavement surface temperatures are taken in the shade.

Spread HMA Type A and Type B only if atmospheric and surface temperatures are:

**Minimum Atmospheric and Surface Temperatures**

Compacted Layer Thickness, mm	Minimum Atmospheric and Surface Temperatures			
	Atmospheric, ° F		Surface, ° F	
	Unmodified Asphalt Binder	Modified Asphalt Binder <sup>a</sup>	Unmodified Asphalt Binder	Modified Asphalt Binder <sup>a</sup>
< 45	12.8	10.0	15.6	12.8
45 – 75	7.2	7.2	10.0	10.0

Note:

<sup>a</sup> Except asphalt rubber binder.

If the asphalt binder for HMA Type A and Type B is:

1. Unmodified asphalt binder, complete:

- 1.1. First coverage of breakdown compaction before the surface temperature drops below 120 °C
- 1.2. Breakdown and intermediate compaction before the surface temperature drops below 95 °C
- 1.3. Finish compaction before the surface temperature drops below 65 °C

2. Modified asphalt binder, complete:

- 2.1. First coverage of breakdown compaction before the surface temperature drops below 115 °C
- 2.2. Breakdown and intermediate compaction before the surface temperature drops below 85 °C
- 2.3. Finish compaction before the surface temperature drops below 60 °C

For RHMA-G:

- 1. Only spread and compact if the atmospheric temperature is at least 12.8 °C and the surface temperature is at least 15.6 °C.
- 2. Complete the first coverage of breakdown compaction before the surface temperature drops below 140 °C.
- 3. Complete breakdown and intermediate compaction before the surface temperature drops below 120 °C.
- 4. Complete finish compaction before the surface temperature drops below 95 °C.
- 5. If the atmospheric temperature is below 21 °C, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For OGFC with unmodified asphalt binder:

- 1. Only spread and compact if the atmospheric temperature is at least 12.8 °C and the surface temperature is at least 15.6 °C.
- 2. Complete first coverage using 2 rollers before the surface temperature drops below 115 °C.
- 3. Complete all compaction before the surface temperature drops below 95 °C.
- 4. If the atmospheric temperature is below 21 °C, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For OGFC with modified asphalt binder except asphalt rubber binder:

- 1. Only spread and compact if the atmospheric temperature is at least 10 °C and the surface temperature is at least 10 °C.
- 2. Complete first coverage using 2 rollers before the surface temperature drops below 115 °C.
- 3. Complete all compaction before the surface temperature drops below 85 °C.
- 4. If the atmospheric temperature is below 21 °C, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until you transfer the mixture to the paver's hopper or to the pavement surface.

For RHMA-O and RHMA-O-HB:

1. Only spread and compact if the atmospheric temperature is at least 12.8 °C and surface temperature is at least 15.6 °C.
2. Complete the 1st coverage using 2 rollers before the surface temperature drops below 140 °C.
3. Complete compaction before the surface temperature drops below 120 °C.
4. If the atmospheric temperature is below 21 °C, cover loads in trucks with tarpaulins. The tarpaulins must completely cover the exposed load until the mixture is transferred to the paver's hopper or to the pavement surface.

For RHMA-G and OGFC, tarpaulins are not required if the time from discharge to truck until transfer to the paver's hopper or the pavement surface is less than 30 minutes.

HMA compaction coverage is the number of passes needed to cover the paving width. A pass is 1 roller's movement parallel to the paving in either direction. Overlapping passes are part of the coverage being made and are not a subsequent coverage. Do not start a coverage until completing the prior coverage.

Start rolling at the lower edge and progress toward the highest part.

Perform breakdown compaction of each layer of HMA Type A, Type B, and RHMA-G with 3 coverages using a vibratory roller. The speed of the vibratory roller in kilometers per hour must not exceed the vibrations per minute divided by 1,600. If the HMA layer thickness is less than 25 mm, turn the vibrator off. The Engineer may order fewer coverages if the HMA layer thickness is less than 45 mm.

Perform intermediate compaction of each layer of HMA Type A and Type B with 3 coverages using a pneumatic-tired roller at a speed not to exceed 8 kilometers per hour.

Perform finish compaction of HMA Type A, Type B, and RHMA-G with 1 coverage using a steel-tired roller.

Compact OGFC with 2 coverages using steel-tired rollers.

### **39-4 QUALITY CONTROL / QUALITY ASSURANCE**

#### **39-4.01 DESCRIPTION**

If HMA is specified as Quality Control / Quality Assurance, construct it under Section 39-1, "General," this Section 39-4, "Quality Control / Quality Assurance," and Section 39-5, "Measurement and Payment."

#### **39-4.02 GENERAL**

The QC / QA construction process consists of:

1. Establishing, maintaining, and changing if needed a quality control system providing assurance the HMA complies with the specifications
2. Sampling and testing at specified intervals, or sublots, to demonstrate compliance and to control process
3. The Engineer sampling and testing at specified intervals to verify testing process and HMA quality
4. The Engineer using test results, statistical evaluation of verified quality control tests, and inspection to accept HMA for payment

A lot is a quantity of HMA. The Engineer designates a new lot when:

1. 20 sublots are complete
2. The JMF changes
3. Production stops for more than 30 days

Each lot consists of no more than 20 sublots. A subplot is 680 tonnes except HMA paved at day's end greater than 225 tonnes is a subplot. If HMA paved at day's end is less than 225 tonnes, you may either make this quantity a subplot or include it in the previous subplot's test results for statistical evaluation.

### **39-4.03 CONTRACTOR QUALITY CONTROL**

#### **39-4.03A GENERAL**

Use a composite quality factor,  $QF_C$ , and individual quality factors,  $QF_{QCi}$ , to control your process and evaluate quality control program. For quality characteristics without quality factors, use your quality control plan's action limits to control process.

Control HMA quality including:

1. Materials
2. Proportioning
3. Spreading and compacting
4. Finished roadway surface

Develop, implement, and maintain a quality control program that includes:

1. Inspection
2. Sampling
3. Testing

#### **39-4.03B QUALITY CONTROL PLAN**

With the JMF submittal, submit a written Quality Control Plan (QCP). The QCP must comply with the Department's Quality Control Manual for Hot Mix Asphalt Production and Placement. Discuss the QCP with the Engineer during the prepaving conference.

The Engineer reviews each QCP within 5 business days from the submittal. Hold HMA production until the Engineer accepts the QCP in writing. The Engineer's QCP acceptance does not mean your compliance with the QCP will result in acceptable HMA. Section 39-1.05, "Engineer's Acceptance," specifies HMA acceptance.

The QCP must include the name and qualifications of a Quality Control Manager. The Quality Control Manager administers the QCP and during paving must be at the job site within 3 hours of receiving notice. The Quality Control Manager must not be any of the following on the project:

1. Foreman
2. Production or paving crewmember
3. Inspector
4. Tester

The QCP must include action limits and details of corrective action you will take if a test result for any quality characteristic falls outside an action limit.

As work progresses, you must submit a written QCP supplement to change quality control procedures, personnel, tester qualification status, or laboratory accreditation status.

#### **39-4.03C QUALITY CONTROL INSPECTION, SAMPLING, AND TESTING**

Sample, test, inspect, and manage HMA quality control.

Provide a roadway inspector while HMA paving activities are in progress. Provide a plant inspector during HMA production.

Inspectors must comply with the Department's Quality Control Manual for Hot Mix Asphalt Production and Placement.

Provide a testing laboratory and personnel for quality control testing. Provide the Engineer unrestricted access to the quality control activities. Before providing services for the project, the Engineer reviews, accredits, and qualifies the testing laboratory and personnel under the Department's Independent Assurance Program.

The minimum random sampling and testing for quality control is:

**Minimum Quality Control – QC / QA**

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	HMA Type			Location of Sampling	Maximum Reporting Time Allowance
			A	B	RHMA-G		
Aggregate gradation <sup>a</sup>	CT 202	1 per 680 tonnes	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>	JMF ± Tolerance <sup>b</sup>	CT 125	24 hours
Asphalt binder content (%)	CT 379 or 382		JMF ±0.45	JMF ±0.45	JMF ±0.5	Loose Mix Behind Paver See CT 125	
Percent of maximum theoretical density (%) <sup>c, d</sup>	QC Plan		92 - 96	92 - 96	91 - 96	QC Plan	
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants <sup>e</sup>	CT 226 or CT 370	2 per day during production	--	--	--	Stock-piles or cold feed belts	--
Sand equivalent (min.) <sup>f</sup>	CT 217	1 per 680 tonnes	47	42	47	CT 125	24 hours
HMA moisture content (% max.)	CT 226 or CT 370	1 per 2250 tonnes but not less than 1 per paving day	1.0	1.0	1.0	Loose Mix Behind Paver See CT 125	24 hours
Stabilometer Value (min.) <sup>f, h</sup> 4.75-mm and 9.5-mm gradings 12.5-mm and 19-mm gradings	CT 366	1 per 3600 tonnes or 2 per 5 business days, whichever is more	30	30	--		48 hours
Air voids content (%) <sup>f, h</sup>	CT 367		37	35	23		
			4 ± 2	4 ± 2	Specification ± 2		

Percent of crushed particles coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min.) (Passing 4.75-mm sieve and retained on 2.36-mm sieve.) One fractured face	CT 205	As necessary and designated in QCP. At least once per project.	90	25	--	CT 125	48 hours	
			75	--	90			
			70	20	70			
Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.	CT 211			12 45	-- 50	12 40		CT 125
Fine aggregate angularity (% min.)	AASHTO T 304, Method A			Report only	Report only	Report only		CT 125
Flat and elongated particle (% max. by mass @ 5:1)	ASTM D 4791							CT 125
Voids filled with asphalt (%) <sup>i</sup> 4.75-mm grading 9.5-mm grading 12.5-mm grading 19-mm grading	LP-2			76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0	76.0 – 80.0 73.0 – 76.0 65.0 – 75.0 65.0 – 75.0			LP-2
Voids in mineral aggregate (% min.) <sup>i</sup> 4.75-mm grading 9.5-mm grading 12.5-mm grading 19-mm grading	LP-3		17.0 15.0 14.0 13.0	17.0 15.0 14.0 13.0	-- -- 18.0 – 23.0 <sup>j</sup> 18.0 – 23.0 <sup>j</sup>	LP-3		
Dust proportion <sup>i</sup> 4.75-mm and 9.5-mm gradings 12.5-mm and 19-mm gradings	LP-4		0.9 – 2.0 0.6 – 1.3	0.9 – 2.0 0.6 – 1.3	Report only	LP-4		
Smoothness	Section 39-1.12	--	3.66-m straight-edge, must-grind, and PI <sub>0</sub>	3.66-m straight-edge, must-grind, and PI <sub>0</sub>	3.66-m straight-edge, must-grind, and PI <sub>0</sub>	--		
Asphalt rubber binder viscosity @ 177 °C, centipoises	Section 39-1.02D	--	--	--	1,500 – 4,000	Section 39-1.02D	24 hours	
Crumb rubber modifier	Section 39-1.02D	--	--	--	Section 39-1.02D	Section 39-1.02D	48 hours	

Notes:

<sup>a</sup> Determine combined aggregate gradation containing RAP under Laboratory Procedure LP-9.

<sup>b</sup> The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

- <sup>c</sup> Required for HMA Type A, Type B, and RHMA-G if the total paved thickness is at least 45 mm.
- <sup>d</sup> Determine maximum theoretical density (California Test 309) at the frequency specified for test maximum density under California Test 375, Part 5 D.
- <sup>e</sup> For adjusting the plant controller at the HMA plant.
- <sup>f</sup> Report the average of 3 tests from a single split sample.
- <sup>g</sup> Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 60 °C ± 3 °C by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 60 °C for a minimum of 2 hours and not more than 3 hours."
- <sup>h</sup> Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
- <sup>i</sup> Report only if the adjustment for asphalt binder content target value is less than ± 0.3 percent from OBC.
- <sup>j</sup> Voids in mineral aggregate for RHMA-G must be within this range.

Within the specified reporting time, submit written test results including:

1. Sampling location, quantity, and time
2. Testing results
3. Supporting data and calculations

If test results for any quality characteristic are beyond the action limits in the QCP, take corrective actions. Document the corrective actions taken in the inspection records under Section 39-4.03E, "Records of Inspection and Testing."

Stop production, notify the Engineer in writing, take corrective action, and demonstrate compliance with the specifications before resuming production and placement on the State highway if:

1. A lot's composite quality factor,  $Q_{FC}$ , or an individual quality factor,  $Q_{F_{QCi}}$  for  $i = 3, 4, \text{ or } 5$ , is below 0.90 determined under Section 39-4.03F, "Statistical Evaluation"
2. An individual quality factor,  $Q_{F_{QCi}}$  for  $i = 1 \text{ or } 2$ , is below 0.75
3. Quality characteristics for which a quality factor,  $Q_{F_{QCi}}$ , is not determined has 2 consecutive acceptance or quality control tests not in compliance with the specifications

#### **39-4.03D CHARTS AND RECORDS**

Record sampling and testing results for quality control on forms provided in the "Quality Control Manual for Hot Mix Asphalt Production and Placement," or on forms you submit with the QCP. The QCP must also include form posting locations and submittal times.

Submit quality control test results using the Department's statistical evaluation program, HMAPay, available at

[www.dot.ca.gov/hq/construc/hma/index.htm](http://www.dot.ca.gov/hq/construc/hma/index.htm)

#### **39-4.03E RECORDS OF INSPECTION AND TESTING**

During HMA production, submit in writing a daily:

1. HMA Construction Daily Record of Inspection. Also make this record available at the HMA plant and job site each day.
2. HMA Inspection and Testing Summary. Include in the summary:
  - 2.1. Test forms with the testers' signatures and Quality Control Manager's initials.
  - 2.2. Inspection forms with the inspectors' signatures and Quality Control Manager's initials.
  - 2.3. A list and explanation of deviations from the specifications or regular practices.
  - 2.4. A signed statement by the Quality Control Manager that says:

"It is hereby certified that the information contained in this record is accurate, and that information, tests, or calculations documented herein comply with the specifications of the contract and the standards set forth in the testing procedures. Exceptions to this certification are documented as part of this record."

Retain for inspection the records generated as part of quality control including inspection, sampling, and testing for at least 3 years after final acceptance.

### 39-4.03F STATISTICAL EVALUATION

#### General

Determine a lot's composite quality factor,  $QF_C$ , and the individual quality factors,  $QF_{QC_i}$ . Perform statistical evaluation calculations to determine these quality factors based on quality control test results for:

1. Aggregate gradation
2. Asphalt binder content
3. Percent of maximum theoretical density

The Engineer grants a waiver and you must use 1.0 as the individual quality factor for percent of maximum theoretical density,  $QF_{QC5}$ , for HMA paved in:

1. Areas where the total paved thickness is less than 45 mm
2. Areas where the total paved thickness is less than 60 mm and a 19-mm grading is specified and used
3. Dig outs
4. Leveling courses
5. Detours not part of the finished roadway prism
6. Areas where, in the opinion of the Engineer, compaction or compaction measurement by conventional methods is impeded

#### Statistical Evaluation Calculations

Use the Variability-Unknown / Standard Deviation Method to determine the percentage of a lot not in compliance with the specifications. The number of significant figures used in the calculations must comply with AASHTO R-11, Absolute Method.

Determine the percentage of work not in compliance with the specification limits for each quality characteristic as follows:

1. Calculate the arithmetic mean ( $\bar{X}$ ) of the test values

$$\bar{X} = \frac{\sum X}{n}$$

where:

x = individual test values  
n = number of test values

2. Calculate the standard deviation

$$s = \sqrt{\frac{n(\sum x^2) - (\sum x)^2}{n(n-1)}}$$

where:

$\sum(x^2)$  = sum of the squares of individual test values  
 $(\sum x)^2$  = sum of the individual test values squared  
n = number of test values

3. Calculate the upper quality index ( $Q_u$ )

$$Q_u = \frac{USL - \bar{X}}{s}$$

where:



USL = target value plus the production tolerance or upper specification limit  
s = standard deviation  
 $\bar{X}$  = arithmetic mean

4. Calculate the lower quality index (QL);

$$Q_L = \frac{\bar{X} - LSL}{s}$$

where:

LSL = target value minus production tolerance or lower specification limit  
s = standard deviation  
 $\bar{X}$  = arithmetic mean

5. From the table, Upper Quality Index  $Q_U$  or Lower Quality Index  $Q_L$ , of this Section 39-4.03F, "Statistical Evaluation", determine  $P_U$ ;

where:

$P_U$  = the estimated percentage of work outside the USL.  
 $P_U = 0$ , when USL is not specified.

6. From the table, Upper Quality Index  $Q_U$  or Lower Quality Index  $Q_L$ , of this Section 39-4.03F, "Statistical Evaluation," determine  $P_L$ ;

where:

$P_L$  = the estimated percentage of work outside the LSL.  
 $P_L = 0$ , when LSL is not specified.

7. Calculate the total estimated percentage of work outside the USL and LSL, percent defective

$$\text{Percent defective} = P_U + P_L$$

$P_U$  and  $P_L$  are determined from:

P <sub>U</sub> or P <sub>L</sub>	Upper Quality Index Q <sub>U</sub> or Lower Quality Index Q <sub>L</sub>												
	Sample Size (n)												
	5	6	7	8	9	10-11	12-14	15-17	18-22	23-29	30-42	43-66	>66
0	1.72	1.88	1.99	2.07	2.13	2.20	2.28	2.34	2.39	2.44	2.48	2.51	2.56
1	1.64	1.75	1.82	1.88	1.91	1.96	2.01	2.04	2.07	2.09	2.12	2.14	2.16
2	1.58	1.66	1.72	1.75	1.78	1.81	1.84	1.87	1.89	1.91	1.93	1.94	1.95
3	1.52	1.59	1.63	1.66	1.68	1.71	1.73	1.75	1.76	1.78	1.79	1.80	1.81
4	1.47	1.52	1.56	1.58	1.60	1.62	1.64	1.65	1.66	1.67	1.68	1.69	1.70
5	1.42	1.47	1.49	1.51	1.52	1.54	1.55	1.56	1.57	1.58	1.59	1.59	1.60
6	1.38	1.41	1.43	1.45	1.46	1.47	1.48	1.49	1.50	1.50	1.51	1.51	1.52
7	1.33	1.36	1.38	1.39	1.40	1.41	1.41	1.42	1.43	1.43	1.44	1.44	1.44
8	1.29	1.31	1.33	1.33	1.34	1.35	1.35	1.36	1.36	1.37	1.37	1.37	1.38
9	1.25	1.27	1.28	1.28	1.29	1.29	1.30	1.30	1.30	1.31	1.31	1.31	1.31
10	1.21	1.23	1.23	1.24	1.24	1.24	1.25	1.25	1.25	1.25	1.25	1.26	1.26
11	1.18	1.18	1.19	1.19	1.19	1.19	1.20	1.20	1.20	1.20	1.20	1.20	1.20
12	1.14	1.14	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
13	1.10	1.10	1.10	1.10	1.10	1.10	1.11	1.11	1.11	1.11	1.11	1.11	1.11
14	1.07	1.07	1.07	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
15	1.03	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
16	1.00	0.99	0.99	0.99	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
17	0.97	0.96	0.95	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.94	0.94
18	0.93	0.92	0.92	0.92	0.91	0.91	0.91	0.91	0.90	0.90	0.90	0.90	0.90
19	0.90	0.89	0.88	0.88	0.88	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
20	0.87	0.86	0.85	0.85	0.84	0.84	0.84	0.83	0.83	0.83	0.83	0.83	0.83
21	0.84	0.82	0.82	0.81	0.81	0.81	0.80	0.80	0.80	0.80	0.80	0.80	0.79
22	0.81	0.79	0.79	0.78	0.78	0.77	0.77	0.77	0.76	0.76	0.76	0.76	0.76
23	0.77	0.76	0.75	0.75	0.74	0.74	0.74	0.73	0.73	0.73	0.73	0.73	0.73
24	0.74	0.73	0.72	0.72	0.71	0.71	0.70	0.70	0.70	0.70	0.70	0.70	0.70
25	0.71	0.70	0.69	0.69	0.68	0.68	0.67	0.67	0.67	0.67	0.67	0.67	0.66
26	0.68	0.67	0.67	0.65	0.65	0.65	0.64	0.64	0.64	0.64	0.64	0.64	0.63
27	0.65	0.64	0.63	0.62	0.62	0.62	0.61	0.61	0.61	0.61	0.61	0.61	0.60
28	0.62	0.61	0.60	0.59	0.59	0.59	0.58	0.58	0.58	0.58	0.58	0.58	0.57
29	0.59	0.58	0.57	0.57	0.56	0.56	0.55	0.55	0.55	0.55	0.55	0.55	0.54
30	0.56	0.55	0.54	0.54	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	0.52
31	0.53	0.52	0.51	0.51	0.50	0.50	0.50	0.49	0.49	0.49	0.49	0.49	0.49
32	0.50	0.49	0.48	0.48	0.48	0.47	0.47	0.47	0.46	0.46	0.46	0.46	0.46
33	0.47	0.48	0.45	0.45	0.45	0.44	0.44	0.44	0.44	0.43	0.43	0.43	0.43
34	0.45	0.43	0.43	0.42	0.42	0.42	0.41	0.41	0.41	0.41	0.41	0.41	0.40
35	0.42	0.40	0.40	0.39	0.39	0.39	0.38	0.38	0.38	0.38	0.38	0.38	0.38
36	0.39	0.38	0.37	0.37	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
37	0.36	0.35	0.34	0.34	0.34	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.32
38	0.33	0.32	0.32	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30	0.30	0.30
39	0.30	0.30	0.29	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
40	0.28	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
41	0.25	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
42	0.23	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
43	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
44	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
45	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
46	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
47	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
48	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
49	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1. If the value of Q<sub>U</sub> or Q<sub>L</sub> does not correspond to a value in the table, use the next lower value.
2. If Q<sub>U</sub> or Q<sub>L</sub> are negative values, P<sub>U</sub> or P<sub>L</sub> is equal to 100 minus the table value for P<sub>U</sub> or P<sub>L</sub>.

**Quality Factor Determination**

Determine individual quality factors,  $QF_{QC_i}$ , using percent defective =  $P_U + P_L$  and:

Quality Factor	Quality Factors												
	Maximum Allowable Percent Defective ( $P_U + P_L$ )												
	Sample Size (n)												
	5	6	7	8	9	10-11	12-14	15-17	18-22	23-29	30-42	43-66	>66
1.05				0	0	0	0	0	0	0	0	0	0
1.04			0	1	3	5	4	4	4	3	3	3	3
1.03		0	2	4	6	8	7	7	6	5	5	4	4
1.02		1	3	6	9	11	10	9	8	7	7	6	6
1.01	0	2	5	8	11	13	12	11	10	9	8	8	7
1.00	22	20	18	17	16	15	14	13	12	11	10	9	8
0.99	24	22	20	19	18	17	16	15	14	13	11	10	9
0.98	26	24	22	21	20	19	18	16	15	14	13	12	10
0.97	28	26	24	23	22	21	19	18	17	16	14	13	12
0.96	30	28	26	25	24	22	21	19	18	17	16	14	13
0.95	32	29	28	26	25	24	22	21	20	18	17	16	14
0.94	33	31	29	28	27	25	24	22	21	20	18	17	15
0.93	35	33	31	29	28	27	25	24	22	21	20	18	16
0.92	37	34	32	31	30	28	27	25	24	22	21	19	18
0.91	38	36	34	32	31	30	28	26	25	24	22	21	19
0.90	39	37	35	34	33	31	29	28	26	25	23	22	20
0.89	41	38	37	35	34	32	31	29	28	26	25	23	21
0.88	42	40	38	36	35	34	32	30	29	27	26	24	22
0.87	43	41	39	38	37	35	33	32	30	29	27	25	23
0.86	45	42	41	39	38	36	34	33	31	30	28	26	24
0.85	46	44	42	40	39	38	36	34	33	31	29	28	25
0.84	47	45	43	42	40	39	37	35	34	32	30	29	27
0.83	49	46	44	43	42	40	38	36	35	33	31	30	28
0.82	50	47	46	44	43	41	39	38	36	34	33	31	29
0.81	51	49	47	45	44	42	41	39	37	36	34	32	30
0.80	52	50	48	46	45	44	42	40	38	37	35	33	31
0.79	54	51	49	48	46	45	43	41	39	38	36	34	32
0.78	55	52	50	49	48	46	44	42	41	39	37	35	33
0.77	56	54	52	50	49	47	45	43	42	40	38	36	34
0.76	57	55	53	51	50	48	46	44	43	41	39	37	35
0.75	58	56	54	52	51	49	47	46	44	42	40	38	36
Reject	60	57	55	53	52	51	48	47	45	43	41	40	37
	61	58	56	55	53	52	50	48	46	44	43	41	38
	62	59	57	56	54	53	51	49	47	45	44	42	39
	63	61	58	57	55	54	52	50	48	47	45	43	40
	64	62	60	58	57	55	53	51	49	48	46	44	41

Reject Values Greater Than Those Shown Above

Notes:

- To obtain a quality factor when the estimated percent outside specification limits from table, "Upper Quality Index  $Q_U$  or Lower Quality Index  $Q_L$ ," does not correspond to a value in the table, use the next larger value.

Compute the composite of single quality factors,  $QF_C$ , for a lot using:

$$QF_C = \sum_{i=1}^5 w_i QF_{QC_i}$$

where:

- $QF_C$  = the composite quality factor for the lot rounded to 2 decimal places.  
 $QF_{QC_i}$  = the quality factor for the individual quality characteristic.  
 $w$  = the weighting factor listed in the table HMA Acceptance – QC / QA.  
 $i$  = the quality characteristic index number in the table HMA Acceptance – QC / QA.

### 39-4.04 ENGINEER'S QUALITY ASSURANCE

#### 39-4.04A GENERAL

The Engineer assures quality by:

1. Reviewing mix designs and proposed JMF
2. Inspecting procedures
3. Conducting oversight of quality control inspection and records
4. Verification sampling and testing during production and paving

#### 39-4.04B VERIFICATION SAMPLING AND TESTING

##### General

The Engineer samples:

1. Aggregate to verify gradation
2. HMA to verify asphalt binder content

##### Verification

For aggregate gradation and asphalt binder content, the ratio of verification testing frequency to the minimum quality control testing frequency is 1:5. The Engineer performs at least 3 verification tests per lot.

Using the t-test, the Engineer compares quality control tests results for aggregate gradation and asphalt binder content with corresponding verification test results. The Engineer uses the average and standard deviation of up to 20 sequential sublots for the comparison. When there are less than 20 sequential sublots, the Engineer uses the maximum number of sequential sublots available. The 21st subplot becomes the 1st subplot ( $n = 1$ ) in the next lot.

The t-value for a group of test data is computed as follows:

$$t = \frac{|\bar{X}_c - \bar{X}_v|}{S_p \sqrt{\frac{1}{n_c} + \frac{1}{n_v}}} \quad \text{and} \quad S_p^2 = \frac{S_c^2(n_c - 1) + S_v^2(n_v - 1)}{n_c + n_v - 2}$$

where:

- $n_c$  = Number of quality control tests (2 minimum, 20 maximum).  
 $n_v$  = Number of verification tests (minimum of 1 required).  
 $\bar{X}_c$  = Mean of quality control tests.  
 $\bar{X}_v$  = Mean of verification tests.  
 $S_p$  = Pooled standard deviation (When  $n_v = 1$ ,  $S_p = S_c$ ).  
 $S_c$  = Standard deviation of quality control tests.  
 $S_v$  = Standard deviation of verification tests (when  $n_v > 1$ ).

The comparison of quality control test results and the verification test results is at a level of significance of  $\alpha = 0.025$ . The Engineer computes t and compares it to the critical t-value,  $t_{crit}$ , from:

**Critical T-Value**

Degrees of freedom (n <sub>c</sub> +n <sub>v</sub> -2)	t <sub>crit</sub> (for α = 0.025)	Degrees of freedom (n <sub>c</sub> +n <sub>v</sub> -2)	t <sub>crit</sub> (for α = 0.025)
1	24.452	18	2.445
2	6.205	19	2.433
3	4.177	20	2.423
4	3.495	21	2.414
5	3.163	22	2.405
6	2.969	23	2.398
7	2.841	24	2.391
8	2.752	25	2.385
9	2.685	26	2.379
10	2.634	27	2.373
11	2.593	28	2.368
12	2.560	29	2.364
13	2.533	30	2.360
14	2.510	40	2.329
15	2.490	60	2.299
16	2.473	120	2.270
17	2.458	∞	2.241

If the t-value computed is less than or equal to t<sub>crit</sub>, quality control test results are verified.

If the t-value computed is greater than t<sub>crit</sub> and both  $\bar{X}_v$  and  $\bar{X}_c$  comply with acceptance specifications, the quality control tests are verified. You may continue to produce and place HMA with the following allowable differences:

1.  $|\bar{X}_v - \bar{X}_c| \leq 1.0$  percent for any grading
2.  $|\bar{X}_v - \bar{X}_c| \leq 0.1$  percent for asphalt binder content

If the t-value computed is greater than t<sub>crit</sub> and the  $|\bar{X}_v - \bar{X}_c|$  for grading and asphalt binder content are greater than the allowable differences, quality control test results are not verified and:

1. The Engineer notifies you in writing.
2. You and the Engineer must investigate why the difference exist.
3. If the reason for the difference cannot be found and corrected, the Engineer's test results are used for acceptance and pay.

**39-4.05 ENGINEER'S ACCEPTANCE**

**39-4.05A TESTING**

The Engineer samples for acceptance testing and tests for:

**HMA Acceptance – QC / QA**

Index (i)	Quality Characteristic				Weight -ing Factor (w)	Test Method	HMA Type		
							A	B	RHMA-G
	Aggregate gradation <sup>a</sup>					CT 202	JMF ± Tolerance <sup>c</sup>		
	Sieve	3/4"	1/2"	3/8"					
1	12.5-mm	X <sup>b</sup>	--	--	0.05				
1	9.5-mm	--	X	--	0.05				
1	4.75-mm	--	--	X	0.05				
2	2.36-mm	X	X	X	0.10				
3	0.075-mm	X	X	X	0.15				
4	Asphalt binder content (%)				0.30	CT 379 or 382	JMF ± 0.45	JMF ± 0.45	JMF ± 0.5
5	Percent of maximum theoretical density (%) <sup>d,e</sup>				0.40	CT 375	92 – 96	92 – 96	91 – 96
	Sand equivalent (min.) <sup>f</sup>					CT 217	47	42	47
	Stabilometer value (min.) <sup>f,g</sup> 4.75-mm and 9.5-mm gradings 12.5-mm and 19-mm gradings					CT 366	30 37	30 35	-- 23
	Air voids content (%) <sup>f,h</sup>					CT 367	4 ± 2	4 ± 2	Specifica-tion ± 2
	Percent of crushed particles coarse aggregate (% min.) One fractured face Two fractured faces Fine aggregate (% min) (Passing 4.75-mm sieve and retained on 2.36-mm sieve.) One fractured face					CT 205	90 70  70	25 --  20	-- 90  70
	HMA moisture content (% max.)					CT 226 or CT 370	1.0	1.0	1.0
	Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.					CT 211	12 45	-- 50	12 45
	Fine aggregate angularity (% min.)					AASHTO T 304, Method A	Report only	Report only	Report only
	Flat and elongated particle (% max. by mass @ 5:1)					ASTM D 4791	Report only	Report only	Report only
	Voids in mineral aggregate (% min.) <sup>1</sup> 4.75-mm grading 9.5-mm grading 12.5-mm grading 19-mm grading					LP-2	17.0 15.0 14.0 13.0	17.0 15.0 14.0 13.0	(Note j) -- -- 18.0 - 23.0 18.0 - 23.0

	Voids filled with asphalt (%) <sup>1</sup> 4.75-mm grading 9.5-mm grading 12.5-mm grading 19-mm grading		LP-3	76.0 - 80.0 73.0 - 76.0 65.0 - 75.0 65.0 - 75.0	76.0 - 80.0 73.0 - 76.0 65.0 - 75.0 65.0 - 75.0	Report only
	Dust proportion <sup>1</sup> 4.75-mm and 9.5-mm gradings 12.5-mm and 19-mm gradings		LP-4	0.9 - 2.0 0.6 - 1.3	0.9 - 2.0 0.6 - 1.3	Report only
	Smoothness		Section 39-1.12	3.66-m straight-edge, must-grind, and PI <sub>0</sub>	3.66-m straight-edge, must-grind, and PI <sub>0</sub>	3.66-m straight-edge, must-grind, and PI <sub>0</sub>
	Asphalt binder		Various	Section 92	Section 92	Section 92
	Asphalt rubber binder		Various	--	--	Section 92-1.02(C) and Section 39-1.02D
	Asphalt modifier		Various	--	--	Section 39-1.02D
	Crumb rubber modifier		Various	--	--	Section 39-1.02D

Notes:

<sup>a</sup> The Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.

<sup>b</sup> "X" denotes the sieves the Engineer considers for the specified aggregate gradation.

<sup>c</sup> The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

<sup>d</sup> The Engineer determines percent of maximum theoretical density if the total paved thickness is at least 45 mm under California Test 375 except the Engineer uses:

1. California Test 308, Method A, to determine in-place density of each core instead of using the nuclear gauge in Part 4, "Determining In-Place Density By The Nuclear Density Device."
2. California Test 309 to determine maximum theoretical density instead of calculating test maximum density in Part 5, "Determining Test Maximum Density."

<sup>e</sup> The Engineer determines maximum theoretical density (California Test 309) at the frequency specified for Test Maximum Density under California Test 375, Part 5.D.

<sup>f</sup> The Engineer reports the average of 3 tests from a single split sample.

<sup>g</sup> Modify California Test 304, Part 2.B.2.c: "After compaction in the mechanical compactor, cool to 60 °C ± 3 °C by allowing the briquettes to cool at room temperature for 0.5 hour, then place the briquettes in the oven at 60 °C for a minimum of 2 hours and not more than 3 hours."

<sup>h</sup> The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

<sup>i</sup> Report only if the adjustment for asphalt binder content target value is less than ± 0.3 percent from OBC.

<sup>j</sup> Voids in mineral aggregate for RHMA-G must be within this range.

The Engineer determines the percent of maximum theoretical density from the average density of 3 cores you take from every 680 tonnes of production or part thereof divided by the maximum theoretical density.

If the total paved thickness is at least 45 mm and any layer is less than 45 mm, the Engineer determines the percent of maximum theoretical density from cores taken from the final layer measured the full depth of the total paved HMA thickness.

The Engineer stops production and terminates a lot if:

1. The lot's composite quality factor, Q<sub>FC</sub>, or an individual quality factor, QF<sub>QCi</sub> for i = 3, 4, or 5, is below 0.90 determined under Section 39-4.03F, "Statistical Evaluation"
2. An individual quality factor, QF<sub>QCi</sub> for i = 1 or 2, is below 0.75

3. Quality characteristics for which a quality factor,  $QF_{QCi}$ , is not determined has 2 consecutive acceptance or quality control tests not in compliance with the specifications

For any single quality characteristic for which a quality factor,  $QF_{QCi}$ , is not determined, except smoothness, if 2 consecutive acceptance test results do not comply with specifications:

1. Stop production.
2. Take corrective action.
3. In the Engineer's presence, take samples and split each sample into 4 parts. Test 1 part for compliance with the specifications and submit 3 parts to the Engineer. The Engineer tests 1 part for compliance with the specifications and reserves and stores 2 parts.
4. Demonstrate compliance with the specifications before resuming production and placement on the State highway.

### **39-4.05B STATISTICAL EVALUATION, DETERMINATION OF QUALITY FACTORS AND ACCEPTANCE**

#### **Statistical Evaluation and Determination of Quality Factors**

To determine the individual quality factor,  $QF_{QCi}$ , for any quality factor  $i = 1$  through 5 or a lot's composite quality factor,  $QF_C$ , for acceptance and payment adjustment, the Engineer uses the evaluation specifications under Section 39-4.03F, "Statistical Evaluation," and:

1. Verified quality control test results for aggregate gradation
2. Verified quality control test results for asphalt binder content
3. The Engineer's test results for percent of maximum theoretical density

#### **Lot Acceptance Based on Quality Factors**

The Engineer accepts a lot based on the quality factors determined for aggregate gradation and asphalt binder content,  $QF_{QCi}$  for  $i = 1$  through 4, using the total number of verified quality control test result values and the total percent defective ( $P_U + P_L$ ).

The Engineer accepts a lot based on the quality factor determined for maximum theoretical density,  $QF_{QC5}$ , using the total number of test result values from cores and the total percent defective ( $P_U + P_L$ ).

The Engineer calculates the quality factor for the lot,  $QF_C$ , which is a composite of weighted individual quality factors,  $QF_{QCi}$ , determined for each quality characteristic in the table "HMA Acceptance – QC / QA" in Section 39-4.05A, "Testing."

The Engineer accepts a lot based on quality factors if:

1. The current composite quality factor,  $QF_C$ , is 0.90 or greater
2. Each individual quality factor,  $QF_{QCi}$  for  $i = 3, 4,$  and  $5$ , is 0.90 or greater
3. Each individual quality factor,  $QF_{QCi}$  for  $i = 1$  and  $2$ , is 0.75 or greater

No single quality characteristic test may represent more than the smaller of 680 tonnes or 1 day's production.

#### **Payment Adjustment**

If a lot is accepted, the Engineer adjusts payment with the following formula:

$$PA = \sum_{i=1}^n HMA CP * w_i * [QF_{QCi} * (HMATT - WHMATT_i) + WHMATT_i] - (HMA CP * HMATT)$$

where:

$PA =$	Payment adjustment rounded to 2 decimal places.
$HMA CP =$	HMA contract price.
$HMATT =$	HMA total tonnes represented in the lot.
$WHMATT_i =$	Total tonnes of waived quality characteristic HMA.
$QF_{QCi} =$	Running quality factor for the individual quality characteristic.



$QF_{QC_i}$  for  $i = 1$  through 4 must be from verified Contractor's QC results.  $QF_{QC_5}$  must be determined from the Engineer's results on cores taken for percent of maximum theoretical density determination.

$w =$  Weighting factor listed in the HMA acceptance table.

$i =$  Quality characteristic index number in the HMA acceptance table.

If the payment adjustment is a negative value, the Engineer deducts this amount from payment. If the payment adjustment is a positive value, the Engineer adds this amount to payment.

The 21st subplot becomes the 1st subplot ( $n = 1$ ) in the next lot. When the 21st sequential subplot becomes the 1st subplot, the previous 20 sequential subplots become a lot for which the Engineer determines a quality factor. The Engineer uses this quality factor to pay for the HMA in the lot. If the next lot consists of less than 8 subplots, these subplots must be added to the previous lot for quality factor determination using 21 to 27 subplots.

#### **39-4.05C DISPUTE RESOLUTION**

For a lot, if you or the Engineer dispute any quality factor,  $QF_{QC_i}$ , or verification test result, every subplot in that lot must be retested.

Referee tests must be performed under the specifications for acceptance testing.

Any quality factor,  $QF_{QC_i}$ , must be determined using the referee tests.

For any quality factor,  $QF_{QC_i}$ , for  $i = 1$  through 5, dispute resolution:

1. If the difference between the quality factors for  $QF_{QC_i}$  using the referee test result and the disputed test result is less than or equal to 0.01, the original test result is correct.
2. If the difference between the quality factor for  $QF_{QC_i}$  using the referee test result and the disputed test result is more than 0.01, the quality factor determined from the referee tests supersedes the previously determined quality factor.

### **39-5 MEASUREMENT AND PAYMENT**

#### **39-5.01 MEASUREMENT**

The contract item for HMA is measured by mass. The mass of each HMA mixture designated in the Engineer's Estimate must be the combined mixture mass.

If tack coat, asphalt binder, and asphaltic emulsion are paid with separate contract items, their contract items are measured under Section 92, "Asphalts," or Section 94, "Asphaltic Emulsions," as the case may be.

If recorded batch mass are printed automatically, the contract item for HMA is measured by using the printed batch mass, provided:

1. Total aggregate and supplemental fine aggregate mass per batch is printed. If supplemental fine aggregate is weighed cumulatively with the aggregate, the total aggregate batch mass must include the supplemental fine aggregate mass.
2. Total asphalt binder mass per batch is printed.
3. Each truckload's zero tolerance mass is printed before weighing the first batch and after weighing the last batch.
4. Time, date, mix number, load number and truck identification is correlated with a load slip.
5. A copy of the recorded batch mass is certified by a licensed weighmaster and submitted to the Engineer.

The contract item for placing HMA dike is measured by the linear meter along the completed length. The contract item for placing HMA in miscellaneous areas is measured as the in-place compacted area in square meters. In addition to the quantities measured on a linear meter or square meter basis, the HMA for dike and miscellaneous areas are measured by mass.

The contract item for shoulder rumble strips is measured by the station along each shoulder on which the rumble strips are constructed without deductions for gaps between indentations.

The contract item for geosynthetic pavement interlayer is measured by the square meter for the actual pavement area covered.

#### **39-5.02 PAYMENT**

The contract prices paid per tonne for hot mix asphalt as designated in the Engineer's Estimate include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in

constructing hot mix asphalt, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

If HMA is specified to comply with Section 39-4, "Quality Control / Quality Assurance," the Engineer adjusts payment under that section.

Full compensation for the Quality Control Plan and prepaving conference is included in the contract prices paid per tonne for hot mix asphalt as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

Full compensation for performing and submitting mix designs and for Contractor sampling, testing, inspection, testing facilities, and preparation and submittal of results is included in the contract prices paid per tonne for HMA as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

Full compensation for reclaimed asphalt pavement is included in the contract prices paid per tonne for HMA as designated in the Engineer's Estimate and no additional compensation will be allowed therefor.

The contract price paid per tonne for hot mix asphalt (leveling) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in hot mix asphalt (leveling), complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract prices paid per station for rumble strips as designated in the Engineer's Estimate include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in constructing rumble strips, including fog seal coat, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The State will pay for HMA dike at the contract price per linear meter for place HMA dike and by the tonne for HMA. The contract prices paid per linear meter for place hot mix asphalt dike as designated in the Engineer's Estimate include full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved in placing HMA dike, complete in place, including excavation, backfill, and preparation of the area to receive the dike, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The State pays for HMA specified to be a miscellaneous area at the contract price per square meter for place hot mix asphalt (miscellaneous area) and per tonne for hot mix asphalt. The contract price paid per square meter for place hot mix asphalt (miscellaneous area) includes full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved in placing HMA (miscellaneous area) complete in place, including excavation, backfill, and preparation of the area to receive HMA (miscellaneous area), as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

If the Quality Control / Quality Assurance construction process is specified, HMA placed in dikes and miscellaneous areas is paid for at the contract price per tonne for hot mix asphalt under Section 39-4, "Quality Control / Quality Assurance." Section 39-4.05B, "Statistical Evaluation, Determination of Quality Factors and Acceptance," does not apply to HMA placed in dikes and miscellaneous areas.

If there are no contract items for place hot mix asphalt dike and place hot mix asphalt (miscellaneous area) and the work is specified, full compensation for constructing HMA dikes and HMA (miscellaneous areas) including excavation, backfill, and preparation of the area to receive HMA dike or HMA (miscellaneous area) is included in the contract price paid per tonne for the hot mix asphalt designated in the Engineer's Estimate and no separate payment will be made therefor.

The contract price paid per square meter for geosynthetic pavement interlayer includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing geosynthetic pavement interlayer, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract price paid per tonne for paving asphalt (binder, geosynthetic pavement interlayer) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying paving asphalt (binder, geosynthetic pavement interlayer), complete in place, including spreading sand to cover exposed binder material, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

Full compensation for small quantities of HMA placed on geosynthetic pavement interlayer to prevent displacement during construction is included in the contract price paid per tonne for the HMA being paved over the interlayer and no separate payment will be made therefor.

The contract price paid per tonne for tack coat includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying tack coat, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

If there is no item for tack coat and the work is specified, full compensation for tack coat is included in the contract price paid per tonne for hot mix asphalt as designated in the Engineer's Estimate and no separate payment will be made therefor.

The Engineer does not adjust payment for increases or decreases in the quantities for tack coat, regardless of the reason for the increase or decrease. Section 4-1.03B, "Increased or Decreased Quantities," does not apply to the items for tack coat.

Full compensation for performing smoothness testing, submitting written and electronic copies of tests, and performing corrective work including applying fog seal coat is included in the contract price paid per tonne for the HMA designated in the Engineer's Estimate and no separate payment will be made therefor.

Full compensation for spreading sand on RHMA-G, RHMA-O, and RHMA-O-HB surfaces and for sweeping and removing excess sand is included in the contract price paid per tonne for rubberized hot mix asphalt as designated in the Engineer's Estimate and no separate payment will be made therefor.

If the Engineer fails to comply with a specification within a specified time, and if, in the opinion of the Engineer, work completion is delayed because of the failure, the Engineer adjusts payment and contract time under Section 8-1.09, "Right of Way Delays."

If the dispute resolution ITP determines the Engineer's test results are correct, the Engineer deducts the ITP's testing costs from payments. If the ITP determines your test results are correct, the State pays the ITP's testing costs. If, in the Engineer's opinion, work completion is delayed because of incorrect Engineer test results, the Engineer adjusts payment and contract time under Section 8-1.09, "Right of Way Delays."

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**SECTION 40 PORTLAND CEMENT CONCRETE PAVEMENT  
(Issued 01-05-07)**

**Delete Section 40-1.015.**

**Replace Section 40-1.05 with:**

**40-1.05 PROPORTIONING**

Aggregate and cementitious material proportioning shall conform to the provisions in Section 90-5, "Proportioning."

**Replace Section 40-1.105 with:**

**40-1.105 EXIT RAMP TERMINI**

Concrete pavement shall be constructed at the ends of exit ramps when required by the plans or the special provisions. Texturing for exit ramp termini shall be by means of heavy brooming in a direction normal to ramp centerline. The hardened surface shall have a coefficient of friction not less than 0.35 as determined by California Test 342. Minimum cementitious material content of concrete in pavement for exit ramp termini shall be 350 kg/m<sup>3</sup>.

**In Section 40-1.08 replace the 4th paragraph with:**

Straight tie bars shall be deformed reinforcing steel bars conforming to the requirements in ASTM Designation: A 615/A 615M, Grade 280 or 420; ASTM Designation: A 996/A 996M, Grade 350 or 420; or ASTM Designation: A 706/A 706M.

**In Section 40-1.14 replace the 1st paragraph with:**

The contract price paid per cubic meter for concrete pavement shall include full compensation for furnishing all labor, materials (including cementitious material in the amount specified), tools, equipment, and incidentals, and for



Indicator tension pile load testing shall conform to the requirements in ASTM Designation: D 3689-90. The loading apparatus described as "Load Applied to Pile by Hydraulic Jack(s) Acting at One End of Test Beam(s) Anchored to the Pile" shall not be used. The pile shall sustain the first tension test load applied which is equal to the nominal resistance in tension, as shown on the plans, with no more than 13 mm total vertical movement at the top of the pile measured relative to the top of the pile prior to the start of tension load testing.

**In Section 49-1.03 replace the 9th paragraph with:**

The Contractor shall furnish piling of sufficient length to obtain the specified tip elevation shown on the plans or specified in the special provisions.

**In Section 49-1.03, delete the 10th paragraph**

**In Section 49-1.04 replace the 4th, 5th, and 6th paragraphs with:**

Load test piles and anchor piles which are not to be incorporated in the completed structure shall be removed in conformance with the provisions in Section 15-4.02, "Removal Methods," and the remaining holes shall be backfilled with earth or other suitable material approved by the Engineer.

Load test anchorages in piles used as anchor piles shall conform to the following requirements:

- A. High strength threaded steel rods shall conform to the provisions for bars in Section 50-1.05, "Prestressing Steel," except Type II bars shall be used.
- B. High strength steel plates shall conform to the requirements in ASTM Designation: A 709/A 709M, Grade 345.
- C. Anchor nuts shall conform to the provisions in the second paragraph in Section 50-1.06, "Anchorages and Distribution."

The Contractor may use additional cementitious material in the concrete for the load test and anchor piles.

**In Section 49-1.05 replace the 1st paragraph with:**

Driven piles shall be installed with impact hammers that are approved in writing by the Engineer. Impact hammers shall be steam, hydraulic, air or diesel hammers. Impact hammers shall develop sufficient energy to drive the piles at a penetration rate of not less than 3 mm per blow at the specified nominal resistance.

**In Section 49-1.05 replace the 7th paragraph with:**

When necessary to obtain the specified penetration and when authorized by the Engineer, the Contractor may supply and operate one or more water jets and pumps, or furnish the necessary drilling apparatus and drill holes not greater than the least dimension of the pile to the proper depth and drive the piles therein. Jets shall not be used at locations where the stability of embankments or other improvements would be endangered. In addition, for steel piles, steel shells, or steel casings, when necessary to obtain the specified penetration or to prevent damage to the pile during installation, the Contractor shall provide special driving tips or heavier pile sections or take other measures as approved by the Engineer.

The use of followers or underwater hammers for driving piles will be permitted if authorized in writing by the Engineer. When a follower or underwater hammer is used, its efficiency shall be verified by furnishing the first pile in each bent or footing sufficiently long and driving the pile without the use of a follower or underwater hammer.

**In Section 49-1.07 replace the 2nd paragraph with:**

Timber piles shall be fresh-headed and square and when permitted by the Engineer, the heads of the piles may be protected by means of heavy steel or wrought iron rings. During driving operations timber piling shall be restrained from lateral movement at intervals not to exceed 6 m over the length between the driving head and the ground surface. During driving operations, the timber pile shall be kept moving by continuous operation of the hammer. When the blow count exceeds either 2 times the blow count required in 300 mm, or 3 times the blow count required in 75 mm for the nominal resistance as shown on the plans, computed in conformance with the provisions in Section 49-1.08, "Pile Driving Acceptance Criteria," additional aids shall be used to obtain the specified

penetration. These aids may include the use of water jets or drilling, where permitted, or the use of a larger hammer employing a heavy ram striking with a low velocity.

**Replace Section 49-1.08 with:**

**49-1.08 PILE DRIVING ACCEPTANCE CRITERIA**

Except for piles to be load tested, driven piles shall be driven to a value of not less than the nominal resistance shown on the plans unless otherwise specified in the special provisions or permitted in writing by the Engineer. In addition, when a pile tip elevation is specified, driven piles shall penetrate at least to the specified tip elevation, unless otherwise permitted in writing by the Engineer. Piles to be load tested shall be driven to the specified tip elevation.

When the pile nominal resistance is omitted from the plans or the special provisions, timber piles shall be driven to a nominal resistance of 800 kN, and steel and concrete piles shall be driven to a nominal resistance of 1250 kN.

The nominal resistance for driven piles shall be determined from the following formula in which "R<sub>u</sub>" is the nominal resistance in kilonewtons, "E<sub>r</sub>" is the manufacturer's rating for joules of energy developed by the hammer at the observed field drop height, and "N" is the number of hammer blows in the last 300 millimeters. (maximum value to be used for N is 100):

$$R_u = (7 * (E_r)^{1/2} * \log_{10} (0.83 * N)) - 550$$

**In Section 49-2.03 replace the 1st paragraph with:**

When preservative treatment of timber piles is required by the plans or specified in the special provisions, the treatment shall conform to the provisions in Section 58, "Preservative Treatment of Lumber, Timber and Piling," and the applicable AWPA Use Category.

**In Section 49-2.04 replace the 1st paragraph with:**

- A. An application of wood preservative conforming to the provisions in Section 58-1.04, "Wood Preservative for Manual Treatment," shall first be applied to the head of the pile and a protective cap shall then be built up by applying alternate layers of loosely woven fabric and hot asphalt or tar similar to membrane waterproofing, using 3 layers of asphalt or tar and 2 layers of fabric. The fabric shall measure at least 150 mm more in each direction than the diameter of the pile and shall be turned down over the pile and the edges secured by binding with 2 turns of No. 10 galvanized wire. The fabric shall be wired in advance of the application of the final layer of asphalt or tar, which shall extend down over the wiring.
- B. The sawed surface shall be covered with 3 applications of a hot mixture of 60 percent creosote and 40 percent roofing pitch, or thoroughly brushcoated with 3 applications of hot creosote and covered with hot roofing pitch. A covering of 3.50-mm nominal thickness galvanized steel sheet shall be placed over the coating and bent down over the sides of each pile to shed water.

**In Section 49-3.01 the 5th paragraph is deleted**

**In Section 49-3.01 replace the 6th and 7th paragraphs with:**

Except for precast prestressed concrete piles in a corrosive environment, lifting anchors used in precast prestressed concrete piles shall be removed, and the holes filled in conformance with the provisions in Section 51-1.18A, "Ordinary Surface Finish."

Lifting anchors used in precast prestressed concrete piles in a corrosive environment shall be removed to a depth of at least 25 mm below the surface of the concrete, and the resulting hole shall be filled with epoxy adhesive before the piles are delivered to the job site. The epoxy adhesive shall conform to the provisions in Sections 95-1, "General," and 95-2.01, "Binder (Adhesive), Epoxy Resin Base (State Specification 8040-03)."

**In Section 49-4.01 replace the 1st and 2nd paragraphs with:**

Cast-in-place concrete piles shall consist of one of the following:

- A. Steel shells driven permanently to the required nominal resistance and penetration and filled with concrete.
- B. Steel casings installed permanently to the required penetration and filled with concrete.
- C. Drilled holes filled with concrete.
- D. Rock sockets filled with concrete.

The drilling of holes shall conform to the provisions in these specifications. Concrete filling for cast-in-place concrete piles is designated by compressive strength and shall have a minimum 28-day compressive strength of 25 MPa. At the option of the Contractor, the combined aggregate grading for the concrete shall be either the 25-mm maximum grading, the 12.5-mm maximum grading, or the 9.5-mm maximum grading. Concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," and Section 51, "Concrete Structures." Reinforcement shall conform to the provisions in Section 52, "Reinforcement."

**In Section 49-4.03 replace the 4th paragraph with:**

After placing reinforcement and prior to placing concrete in the drilled hole, if caving occurs or deteriorated foundation material accumulates on the bottom of the hole, the bottom of the drilled hole shall be cleaned. The Contractor shall verify that the bottom of the drilled hole is clean.

**In Section 49-4.04 replace the 1st and 2nd paragraphs with:**

Steel shells shall be sufficiently watertight to exclude water during the placing of concrete. The shells may be cylindrical or tapered, step-tapered, or a combination of either, with cylindrical sections.

**In Section 49-4.05 replace the 1st paragraph with:**

After being driven and prior to placing reinforcement and concrete therein, the steel shells shall be examined for collapse or reduced diameter at any point. Any shell which is improperly driven or broken or shows partial collapse to such an extent as to materially decrease its nominal resistance will be rejected. Rejected shells shall be removed and replaced, or a new shell shall be driven adjacent to the rejected shell. Rejected shells which cannot be removed shall be filled with concrete by the Contractor at the Contractor's expense. When a new shell is driven to replace a rejected shell, the Contractor, at the Contractor's expense, shall enlarge the footing as determined necessary by the Engineer.

**In Section 49-4.05 replace the 3rd paragraph with:**

Steel pipe piles shall conform to the following requirements:

1. Steel pipe piles less than 360 mm in diameter shall conform to the requirements in ASTM Designation: A 252, Grade 2 or 3.
2. Steel pipe piles 360 mm and greater in diameter shall conform to the requirements in ASTM Designation: A 252, Grade 3.
3. Steel pipe piles shall be of the nominal diameter and nominal wall thickness shown on the plans or specified in the special provisions.
4. The carbon equivalency (CE) of steel for steel pipe piles, as defined in AWS D 1.1, Section XI5.1, shall not exceed 0.45.
5. The sulfur content of steel for steel pipe piles shall not exceed 0.05-percent.
6. Seams in steel pipe piles shall be complete penetration welds.

**In Section 49-6.01 replace the 1st paragraph with:**

The length of timber, steel, and precast prestressed concrete piles, and of cast-in-place concrete piles consisting of driven shells filled with concrete, shall be measured along the longest side, from the tip elevation shown on the plans to the plane of pile cut-off.





**Replace Section 50-1.05 with:**

**50-1.05 PRESTRESSING STEEL**

Prestressing steel shall be high-tensile wire conforming to the requirements in ASTM Designation: A 421, including Supplement I; high-tensile seven-wire strand conforming to the requirements in ASTM Designation: A 416; or uncoated high-strength steel bars conforming to the requirements in ASTM Designation: A 722, including all supplementary requirements. The maximum mass requirement of ASTM Designation: A 722 will not apply.

In addition to the requirements of ASTM Designation: A 722, for deformed bars, the reduction of area shall be determined from a bar from which the deformations have been removed. The bar shall be machined no more than necessary to remove the deformations over a length of 300 mm, and reduction will be based on the area of the machined portion.

In addition to the requirements specified herein, epoxy-coated seven-wire prestressing steel strand shall be grit impregnated and filled in conformance with the requirements in ASTM Designation: A 882/A 882M, including Supplement I, and the following:

- A. The film thickness of the coating after curing shall be 381  $\mu\text{m}$  to 1143  $\mu\text{m}$ .
- B. Prior to coating the strand, the Contractor shall furnish to the Transportation Laboratory a representative 230-g sample from each batch of epoxy coating material to be used. Each sample shall be packaged in an airtight container identified with the manufacturer's name and batch number.
- C. Prior to use of the epoxy-coated strand in the work, written certifications referenced in ASTM Designation: A 882/A 882M, including a representative load-elongation curve for each size and grade of strand to be used and a copy of the quality control tests performed by the manufacturer, shall be furnished to the Engineer.
- D. In addition to the requirements in Section 50-1.10, "Samples for Testing," four 1.5-m long samples of coated strand and one 1.5-m long sample of uncoated strand of each size and reel shall be furnished to the Engineer for testing. These samples, as selected by the Engineer, shall be representative of the material to be used in the work.
- E. Epoxy-coated strand shall be cut using an abrasive saw.
- F. All visible damage to coatings caused by shipping and handling, or during installation, including cut ends, shall be repaired in conformance with the requirements in ASTM Designation: A 882/A 882M. The patching material shall be furnished by the manufacturer of the epoxy powder and shall be applied in conformance with the manufacturer's written recommendations. The patching material shall be compatible with the original epoxy coating material and shall be inert in concrete.

All bars in any individual member shall be of the same grade, unless otherwise permitted by the Engineer.

When bars are to be extended by the use of couplers, the assembled units shall have a tensile strength of not less than the manufacturer's minimum guaranteed ultimate tensile strength of the bars. Failure of any one sample to meet this requirement will be cause for rejection of the heat of bars and lot of couplers. The location of couplers in the member shall be subject to approval by the Engineer.

Wires shall be straightened if necessary to produce equal stress in all wires or wire groups or parallel lay cables that are to be stressed simultaneously or when necessary to ensure proper positioning in the ducts.

Where wires are to be button-headed, the buttons shall be cold formed symmetrically about the axes of the wires. The buttons shall develop the minimum guaranteed ultimate tensile strength of the wire. No cold forming process shall be used that causes indentations in the wire. Buttonheads shall not contain wide open splits, more than 2 splits per head, or splits not parallel with the axis of the wire.

Prestressing steel shall be protected against physical damage and rust or other results of corrosion at all times from manufacture to grouting or encasing in concrete. Prestressing steel that has sustained physical damage at any time shall be rejected. The development of visible rust or other results of corrosion shall be cause for rejection, when ordered by the Engineer.

Epoxy-coated prestressing steel strand shall be covered with an opaque polyethylene sheeting or other suitable protective material to protect the strand from exposure to sunlight, salt spray, and weather. For stacked coils, the protective covering shall be draped around the perimeter of the stack. The covering shall be adequately secured; however, it should allow for air circulation around the strand to prevent condensation under the covering. Epoxy-coated strand shall not be stored within 300 m of ocean or tidal water for more than 2 months.

Prestressing steel shall be packaged in containers or shipping forms for the protection of the steel against physical damage and corrosion during shipping and storage. Except for epoxy-coated strand, a corrosion inhibitor which prevents rust or other results of corrosion, shall be placed in the package or form, or shall be incorporated in a corrosion inhibitor carrier type packaging material, or when permitted by the Engineer, may be applied directly to the steel. The corrosion inhibitor shall have no deleterious effect on the steel or concrete or bond strength of steel to concrete. Packaging or forms damaged from any cause shall be immediately replaced or restored to original condition.

The shipping package or form shall be clearly marked with a statement that the package contains high-strength prestressing steel, and the type of corrosion inhibitor used, including the date packaged.

Prestressing steel for post-tensioning which is installed in members prior to placing and curing of the concrete, and which is not epoxy-coated, shall be continuously protected against rust or other results of corrosion, until grouted, by means of a corrosion inhibitor placed in the ducts or applied to the steel in the duct. The corrosion inhibitor shall conform to the provisions specified herein.

When steam curing is used, prestressing steel for post-tensioning shall not be installed until the steam curing is completed.

Water used for flushing ducts shall contain either quick lime (calcium oxide) or slaked lime (calcium hydroxide) in the amount of 0.01-kg/L. Compressed air used to blow out ducts shall be oil free.

When prestressing steel for post-tensioning is installed in the ducts after completion of concrete curing, and if stressing and grouting are completed within 10 days after the installation of the prestressing steel, rust which may form during those 10 days will not be cause for rejection of the steel. Prestressing steel installed, tensioned, and grouted in this manner, all within 10 days, will not require the use of a corrosion inhibitor in the duct following installation of the prestressing steel. Prestressing steel installed as above but not grouted within 10 days shall be subject to all the requirements in this section pertaining to corrosion protection and rejection because of rust. The requirements in this section pertaining to tensioning and grouting within 10 days shall not apply to epoxy-coated prestressing steel strand.

Any time prestressing steel for pretensioning is placed in the stressing bed and is exposed to the elements for more than 36 hours prior to encasement in concrete, adequate measures shall be taken by the Contractor, as approved by the Engineer, to protect the steel from contamination or corrosion.

After final fabrication of the seven-wire prestressing steel strand, no electric welding of any form shall be performed on the prestressing steel. Whenever electric welding is performed on or near members containing prestressing steel, the welding ground shall be attached directly to the steel being welded.

Pretensioned prestressing steel shall be cut off flush with the end of the member. For epoxy-coated prestressing steel, only abrasive saws shall be used to cut the steel. The exposed ends of the prestressing steel and a 25-mm strip of adjoining concrete shall be cleaned and painted. Cleaning shall be by wire brushing or abrasive blast cleaning to remove all dirt and residue on the metal or concrete surfaces. Immediately after cleaning, the surfaces shall be covered with one application of unthinned zinc-rich primer (organic vehicle type) conforming to the provisions in Section 91, "Paint," except that 2 applications shall be applied to surfaces which will not be covered by concrete or mortar. Aerosol cans shall not be used. The paint shall be thoroughly mixed at the time of application and shall be worked into any voids in the prestressing tendons.

**In Section 50-1.07 replace the 2nd paragraph with:**

Ducts shall be fabricated with either welded or interlocked seams. Galvanizing of the welded seam will not be required. Ducts shall have sufficient strength to maintain their correct alignment during placing of concrete. Joints between sections of duct shall be positive metallic connections which do not result in angle changes at the joints. Waterproof tape shall be used at the connections. Ducts shall be bent without crimping or flattening. Transition couplings connecting the ducts to anchoring devices shall be either ferrous metal or polyolefin. Ferrous metal transition couplings need not be galvanized.

**In Section 50-1.07 replace the 7th paragraph with:**

All ducts with a total length of 120 m or more shall be vented. Vents shall be placed at intervals of not more than 120 m and shall be located within 2 m of every high point in the duct profile. Vents shall be 12 mm minimum diameter standard pipe or suitable plastic pipe. Connections to ducts shall be made with metallic or plastic structural fasteners. Plastic components, if selected, shall not react with the concrete or enhance corrosion of the prestressing steel and shall be free of water soluble chlorides. The vents shall be mortar tight, taped as necessary, and shall

provide means for injection of grout through the vents and for sealing the vents. Ends of vents shall be removed 25 mm below the roadway surface after grouting has been completed.

**In Section 50-1.08 replace the 6th paragraph with:**

The following formula and friction coefficients shall be used in calculating friction losses in tendons:

$$T_o = T_x e^{(\mu\alpha + KL)}$$

Where:

$T_o$  = steel stress at jacking end

$T_x$  = steel stress at any point x

e = base of Napierian logarithms

$\mu$  = friction curvature coefficient

$\alpha$  = total angular change of prestressing steel profile in radians from jacking end to point x

K = friction wobble coefficient (=0.00066/m)

L = length of prestressing steel from jacking end to point x

Type of Steel Tendon	Length of Tendon L(m)	Type of Duct	$\mu$
Wire or Strand	0 to less than 183	Rigid or semi-rigid galvanized sheet metal	0.15
	183 to less than 275		0.20
	275 to less than 366		0.25
	Greater than or equal to 366		0.25*
Wire or Strand	All	Plastic	0.23
	All	Rigid Steel Pipes	0.25*
High Strength Bar	All	Rigid or semi-rigid galvanized sheet metal	0.30

\* With the use of lubrication

**In Section 50-1.08 in the 11th paragraph, replace item 2 with:**

- When the concrete is designated by class or cementitious material content, either the concrete compressive strength shall have reached the strength shown on the plans at the time of stressing or at least 28 days shall have elapsed since the last concrete to be prestressed has been placed, whichever occurs first.

**In Section 50-1.08 replace the 13th and 14th paragraphs with:**

Prestressing steel in pretensioned members shall not be cut or released until the concrete in the member has attained a compressive strength of not less than the value shown on the plans or 28 MPa, whichever is greater. In addition to these concrete strength requirements, when epoxy-coated prestressing steel strand is used, the steel shall not be cut or released until the temperature of the concrete surrounding the strand is less than 65°C, and falling.

When ordered by the Engineer, prestressing steel strands in pretensioned members, if tensioned individually, shall be checked by the Contractor for loss of prestress not more than 48 hours prior to placing concrete for the members. The method and equipment for checking the loss of prestress shall be subject to approval by the Engineer. Strands which show a loss of prestress in excess of 3 percent shall be retensioned to the original computed jacking stress.

**In Section 50-1.09 replace the 2nd and 3rd paragraphs with:**

Grout shall consist of cement and water and may contain an admixture if approved by the Engineer.  
Cement shall conform to the provisions in Section 90-2.01A, "Cement."

**In Section 50-1.10 replace the 5th paragraph with:**

The following samples of materials and tendons, selected by the Engineer from the prestressing steel at the plant or jobsite, shall be furnished by the Contractor to the Engineer well in advance of anticipated use:

- A. For wire or bars, one 2-m long sample and for strand, one 1.5-m long sample, of each size shall be furnished for each heat or reel.
- B. For epoxy-coated strand, one 1.5-m long sample of uncoated strand of each size shall be furnished for each reel.
- C. If the prestressing tendon is a bar, one 2-m long sample shall be furnished and in addition, if couplers are to be used with the bar, two 1.25-m long samples of bar, equipped with one coupler and fabricated to fit the coupler, shall be furnished.

**In Section 50-1.11 replace the 1st paragraph with:**

No separate payment will be made for pretensioning precast concrete members. Payment for pretensioning precast concrete members shall be considered as included in the contract price paid for furnish precast members as provided for in Section 51, "Concrete Structures."

**In Section 50-1.11 replace the 2nd paragraph with:**

The contract lump sum prices paid for prestressing cast-in-place concrete of the types listed in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in furnishing, placing, and tensioning the prestressing steel in cast-in-place concrete structures, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

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**SECTION 51: CONCRETE STRUCTURES**  
**(Issued 05-02-08)**

**In Section 51-1.05 replace the 11th paragraph with:**

Form panels for exposed surfaces shall be furnished and placed in uniform widths of not less than 0.9-m and in uniform lengths of not less than 1.8 m, except at the end of continuously formed surfaces where the final panel length required is less than 1.8 m. Where the width of the member formed is less than 0.9-m, the width of the panels shall be not less than the width of the member. Panels shall be arranged in symmetrical patterns conforming to the general lines of the structure. Except when otherwise provided herein or shown on the plans, panels for vertical surfaces shall be placed with the long dimension horizontal and with horizontal joints level and continuous. Form panels for curved surfaces of columns shall be continuous for a minimum of one quarter of the circumference, or 1.8 m. For walls with sloping footings which do not abut other walls, panels may be placed with the long dimension parallel to the footing. Form panels on each side of the panel joint shall be precisely aligned, by means of supports or fasteners common to both panels, to result in a continuous unbroken concrete plane surface. When prefabricated soffit panels are used, form filler panels joining prefabricated panels shall have a uniform minimum width of 0.3-m and shall produce a smooth uniform surface with consistent longitudinal joint lines between the prefabricated panels.

**In Section 51-1.06A replace the 1st paragraph with:**

The Contractor shall submit to the Engineer working drawings and design calculations for falsework proposed for use at bridges. For bridges where the height of any portion of the falsework, as measured from the ground line to the soffit of the superstructure, exceeds 4.25 m; or where any individual falsework clear span length exceeds 4.85 m; or where provision for vehicular, pedestrian, or railroad traffic through the falsework is made; the drawings shall be signed by an engineer who is registered as a Civil Engineer in the State of California. Six sets of the working drawings and 2 copies of the design calculations shall be furnished. Additional working drawings and design calculations shall be submitted to the Engineer when specified in "Railroad Relations and Insurance" of the special provisions.

**In Section 51-1.06A replace the 2nd paragraph with:**

The falsework drawings shall include details of the falsework erection and removal operations showing the methods and sequences of erection and removal and the equipment to be used. The details of the falsework erection and removal operations shall demonstrate the stability of all or any portions of the falsework during all stages of the erection and removal operations.

**In Section 51-1.06A replace the 7th paragraph with:**

In the event that several falsework plans are submitted simultaneously, or an additional plan is submitted for review before the review of a previously submitted plan has been completed, the Contractor shall designate the sequence in which the plans are to be reviewed. In such event, the time to be provided for the review of any plan in the sequence shall be not less than the review time specified above for that plan, plus 2 weeks for each plan of higher priority which is still under review. A falsework plan submittal shall consist of plans for a single bridge or portion thereof. For multi-frame bridges, each frame shall require a separate falsework plan submittal.

**In Section 51-1.06A, add:**

If structural composite lumber is proposed for use, the falsework drawings shall clearly identify the structural composite lumber members by grade (E value), species, and type. The Contractor shall provide technical data from the manufacturer showing the tabulated working stress values of the composite lumber. The Contractor shall furnish a certificate of compliance as specified in Section 6-1.07, "Certificates of Compliance," for each delivery of structural composite lumber to the project site.

For falsework piles with a calculated loading capacity greater than 900 kN, the falsework piles shall be designed by an engineer who is registered as either a Civil Engineer or a Geotechnical Engineer in the State of California, and the calculations shall be submitted to the Engineer.

**In Section 51-1.06A(1) replace the 1st paragraph with:**

The design load for falsework shall consist of the sum of dead and live vertical loads, and an assumed horizontal load. The minimum total design load for any falsework, including members that support walkways, shall be not less than  $4800 \text{ N/m}^2$  for the combined live and dead load regardless of slab thickness.

**In Section 51-1.06A(1) replace the 8th paragraph with:**

In addition to the minimum requirements specified in this Section 51-1.06A, falsework for box girder structures with internal falsework bracing systems using flexible members capable of withstanding tensile forces only, shall be designed to include the vertical effects caused by the elongation of the flexible member and the design horizontal load combined with the dead and live loads imposed by concrete placement for the girder stems and connected bottom slabs. Falsework comprised of individual steel towers with bracing systems using flexible members capable of withstanding tensile forces only to resist overturning, shall be exempt from these additional requirements.

**In Section 51-1.06B replace the 3rd paragraph with:**

When falsework is supported on piles, the piles shall be driven and the actual nominal resistance assessed in conformance with the provisions in Section 49, "Piling."

**In Section 51-1.06B, add:**

For falsework piles with a calculated nominal resistance greater than 1800 kN, the Contractor shall conduct dynamic monitoring of pile driving and generate field acceptance criteria based on a wave equation analysis. These analyses shall be signed by an engineer who is registered as a Civil Engineer in the State of California and submitted to the Engineer prior to completion of falsework erection.

Prior to the placement of falsework members above the stringers, the final bracing system for the falsework shall be installed.

**In Section 51-1.06C, add:**

The falsework removal operation shall be conducted in such a manner that any portion of the falsework not yet removed remains in a stable condition at all times.

**In Section 51-1.09 replace the 6th paragraph with:**

Vibrators used to consolidate concrete containing epoxy-coated bar reinforcement or epoxy-coated prestressing steel shall have a resilient covering to prevent damage to the epoxy-coating on the reinforcement or prestressing steel.

**In Section 51-1.11 replace the 6th paragraph with:**

Construction methods and equipment employed by the Contractor shall conform to the provisions in Section 7-1.02, "Load Limitations."

**In Section 51-1.12D replace the 4th paragraph with:**

Expanded polystyrene shall be a commercially available polystyrene board. Expanded polystyrene shall have a minimum flexural strength of 240 kPa determined in conformance with the requirements in ASTM Designation: C 203 and a compressive yield strength of between 110 and 275 kPa at 5 percent compression. Surfaces of expanded polystyrene against which concrete is placed shall be faced with hardboard. Hardboard shall be 3 mm minimum thickness, conforming to ANSI A135.4, any class. Other facing materials may be used provided they furnish equivalent protection. Boards shall be held in place by nails, waterproof adhesive, or other means approved by the Engineer.

**In Section 51-1.12F, add:**

The opening of the joints at the time of placing shall be that shown on the plans adjusted for temperature. Care shall be taken to avoid impairment of the clearance in any manner.

**In Section 51-1.12F replace the 1st and 2nd paragraphs with:**

Where shown on the plans, joints in structures shall be sealed with joint seals, joint seal assemblies, or seismic joints in conformance with the details shown on the plans, the provisions in these specifications, and the special provisions.

Type A and AL joint seals shall consist of a groove in the concrete that is filled with field-mixed silicone sealant.

**In Section 51-1.12F replace the 4th and 5th paragraphs with:**

Joint seal assemblies and seismic joints shall consist of metal or metal and elastomeric assemblies which are anchored or cast into a recess in the concrete over the joint. Strip seal joint seal assemblies consist of only one joint cell. Modular unit joint seal assemblies consist of more than one joint cell.

The Movement Rating (MR) shall be measured normal to the longitudinal axis of the joint. The type of seal to be used for the MR shown on the plans shall be as follows:

Movement Rating (MR)	Seal Type
MR ≤ 25 mm	Type A or Type B
25 mm < MR ≤ 50 mm	Type B
50 mm < MR ≤ 100 mm	Joint Seal Assembly (Strip Seal)
MR > 100 mm	Joint Seal Assembly (Modular Unit) or Seismic Joint

**In Section 51-1.12F(3)(a) replace the 1st and 2nd paragraphs with:**

The sealant must consist of a 2-component silicone sealant that will withstand up to ±50 percent movement. Silicone sealants must be tested under California Test 435 and must comply with the following:

Specification	Requirement
Modulus at 150 percent elongation	35–520 kPa
Recovery	17 mm max.
Notch Test	Notched or loss of bond 6 mm, max.
Water Resistance	Notched or loss of bond 6 mm, max.
Ultraviolet Exposure ASTM Designation: G 154, Table X2.1, Cycle 2.	No more than slight checking or cracking.
Cone Penetration	4.5-12.0 mm

**In Section 51-1.12F(3)(a) delete the 3rd and 8th paragraphs.**

**In Section 51-1.12F(3)(a) replace the 10th paragraph with:**

A Certificate of Compliance accompanied by a certified test report must be furnished for each batch of silicone sealant in conformance with the provisions in Section 6-1.07, "Certificates of Compliance."

**In Section 51-1.12F(3)(b) replace the 2nd paragraph with:**

The preformed elastomeric joint seal must conform to the requirements in ASTM D 2628 and the following:

1. The seal must consist of a multichannel, nonporous, homogeneous material furnished in a finished extruded form.
2. The minimum depth of the seal measured at the contact surface must be at least 95 percent of the minimum uncompressed width of the seal as designated by the manufacturer.
3. When tested in conformance with the requirements in California Test 673 for Type B seals, joint seals must provide a movement rating (MR) of not less than that shown on the plans.
4. The top and bottom edges of the joint seal must maintain continuous contact with the sides of the groove over the entire range of joint movement.
5. The seal must be furnished full length for each joint with no more than 1 shop splice in any 18 m length of seal.
6. The Contractor must demonstrate the adequacy of the procedures to be used in the work before installing seals in the joints.
7. One field splice per joint may be made at locations and by methods approved by the Engineer. The seals are to be manufactured full length for the intended joint, then cut at the approved splice section and rematched before splicing. The Contractor must submit splicing details prepared by the joint seal manufacturer for approval before beginning splicing work.
8. Shop splices and field splices must have no visible offset of exterior surfaces and must show no evidence of bond failure.
9. At all open ends of the seal that would admit water or debris, each cell must be filled to a depth of 80 mm with commercial quality open cell polyurethane foam or closed by other means subject to approval by the Engineer.

**In Section 51-1.12F(3)(b) replace the 7th paragraph with:**

The joint seal must be installed full length for each joint with equipment that does not twist or distort the seal, elongate the seal longitudinally, or otherwise cause damage to the seal or to the concrete forming the groove.

**Replace Section 51-1.12F(3)(c), with:**

**(c) Joint Seal Assemblies and Seismic Joints**

Joint seal assemblies and seismic joints shall be furnished and installed in joints in bridge decks as shown on the plans and as specified in the special provisions.

**In Section 51-1.12H(1) replace the 8th paragraph with:**

The elastomer, as determined from test specimens, shall conform to the following:

Test	ASTM Designation	Requirement
Tensile strength, MPa	D 412	15.5 Min.
Elongation at break, percent	D 412	350 Min.
Compression set, 22 h at 70°C, percent	D 395 (Method B)	25 Max.
Tear strength, kN/m	D 624 (Die C)	31.5 Min.
Hardness (Type A)	D 2240 with 2 kg. mass	55 ±5
Ozone resistance 20% strain, 100 h at 40°C ±2°C	D 1149 (except 100 ±20 parts per 100 000 000)	No cracks
Instantaneous thermal stiffening at -40°C	D 1043	Shall not exceed 4 times the stiffness measured at 23°C
Low temperature brittleness at -40°C	D 746 (Procedure B)	Pass

**In Section 51-1.12H(1) in the 9th paragraph replace the table, with:**

Tensile strength, percent	-15
Elongation at break, percent	-40; but not less than 300% total elongation of the material
Hardness, points	+10

**In Section 51-1.12H(2) replace the 1st paragraph with:**

Steel reinforced elastomeric bearings shall conform to the requirements for steel-laminated elastomeric bearings in ASTM Designation: D 4014 and the following:

- A. The bearings shall consist of alternating steel laminates and internal elastomer laminates with top and bottom elastomer covers. Steel laminates shall have a nominal thickness of 1.9 mm (14 gage). Internal elastomer laminates shall have a thickness of 12 mm, and top and bottom elastomer covers shall each have a thickness of 6 mm. The combined thickness of internal elastomer laminates and top and bottom elastomer covers shall be equal to the bearing pad thickness shown on the plans. The elastomer cover to the steel laminates at the sides of the bearing shall be 3 mm. If guide pins or other devices are used to control the side cover over the steel laminates, any exposed portions of the steel laminates shall be sealed by vulcanized patching. The length, width, or diameter of the bearings shall be as shown on the plans.
- B. The total thickness of the bearings shall be equal to the thickness of elastomer laminates and covers plus the thickness of the steel laminates.
- C. Elastomer for steel reinforced elastomeric bearings shall conform to the provisions for elastomer in Section 51-1.12H(1), "Plain and Fabric Reinforced Elastomeric Bearing Pads."



- D. A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished to the Engineer certifying that the bearings to be furnished conform to all of the above provisions. The Certificate of Compliance shall be supported by a certified copy of the results of tests performed by the manufacturer on the bearings.
- E. One sample bearing shall be furnished to the Engineer from each lot of bearings to be furnished for the contract. Samples shall be available at least 3 weeks in advance of intended use. The sample bearing shall be one of the following:

Bearing Pad Thickness as Shown on the Plans	Sample Bearing
≤ 50 mm	Smallest complete bearing shown on the plans
> 50 mm	* 57 ± 3 mm thick sample not less than 200 mm x 305 mm in plan and cut by the manufacturer from the center of one of the thickest complete bearings

\* The sample bearing plus remnant parts of the complete bearing shall be furnished to the Engineer.

- F. A test specimen taken from the sample furnished to the Engineer will be tested in conformance with the requirements in California Test 663. Specimens tested shall show no indication of loss of bond between the elastomer and steel laminates.

**In Section 51-1.135 replace the 1st paragraph with:**

Mortar shall be composed of cementitious material, sand, and water proportioned and mixed as specified in this Section 51-1.135.

**In Section 51-1.135 replace the 3rd paragraph with:**

The proportion of cementitious material to sand, measured by volume, shall be 1:2 unless otherwise specified.

**In Section 51-1.14 replace the 4th paragraph with:**

Neoprene shall be manufactured from a vulcanized elastomeric compound containing neoprene as the sole elastomer and shall conform to the following:

Test	ASTM Designation	Requirement
Tensile strength, MPa	D 412	13.8 Min.
Elongation at break, percent	D 412	300 Min.
Compression set, 22 h at 70°C, percent	D 395 (Method B)	30 Max.
Tear strength, kN/m	D 624 (Die C)	26.3 Min.
Hardness (Type A)	D 2240	55±5
Ozone resistance 20% strain, 100 h at 38°C ±1°C	D 1149 (except 100±20 parts per 100 000 000)	No cracks
Low temperature brittleness at -40°C	D 746 (Procedure B)	Pass
Flame resistance	C 542	Must not propagate flame
Oil Swell, ASTM Oil #3, 70 h at 100°C, volume change, percent	D 471	80 Max.
Water absorption, immersed 7 days at 70°C, change in mass, percent	D 471	15 Max.

**In Section 51-1.17 in 4th paragraph, replace the 1st sentence with:**

The smoothness of completed roadway surfaces of structures, approach slabs and the adjacent 15 m of approach pavement, and the top surfaces of concrete decks which are to be covered with another material, will be tested by the Engineer with a bridge profilograph in conformance with the requirements in California Test 547 and the requirements herein.

**In Section 51-1.17 delete the 7th paragraph**

**In Section 51-1.17 delete the 13th paragraph**

**In Section 51-1.17 delete the 14th paragraph**

**Add Section:**

**51-1.17A DECK CRACK TREATMENT**

The Contractor shall use all means necessary to minimize the development of shrinkage cracks.

The Contractor shall remove all equipment and materials from the deck and clean the surface as necessary for the Engineer to measure the surface crack intensity. Surface crack intensity will be determined by the Engineer after completion of concrete cure, before prestressing, and before the release of falsework. In any 50 square meter portion of deck within the limits of the new concrete deck, should the intensity of cracking be such that there are more than 5 m of cracks whose width at any location exceeds 0.5 mm, the deck shall be treated with methacrylate resin. The area of deck to be treated shall have a width that extends for the entire width of new deck inside the concrete barriers and a length that extends at least 1.5 m beyond the furthest single continuous crack outside the 50 square meter portion, measured from where that crack exceeds 0.5 mm in width, as determined by the Engineer.

Deck crack treatment shall include furnishing, testing, and application of methacrylate resin and sand. If grinding is required, deck treatment shall take place before grinding.

**51-1.17A(1) Submittals**

Before starting deck treatment, the Contractor shall submit plans in conformance with Section 5-1.02, "Plans and Working Drawings," for the following:

1. Public safety plan for the use of methacrylate resin
2. Placement plan for the construction operation

The plans shall identify materials, equipment, and methods to be used.

The public safety plan for the use of methacrylate resin shall include details for the following:

1. Shipping
2. Storage
3. Handling
4. Disposal of residual methacrylate resin and the containers

The placement plan for construction shall include the following:

1. Schedule of deck treatment for each bridge. The schedule shall be consistent with "Maintaining Traffic," of the special provisions and shall include time for the Engineer to perform California Test 342.
2. Methods and materials to be used, including the following:
  - 2.1. Description of equipment for applying the resin
  - 2.2. Description of equipment for applying the sand
  - 2.3. Gel time range and final cure time for the resin

If the measures proposed in the safety plan are inadequate to provide for public safety associated with the use of methacrylate resin, the Engineer will reject the plan and direct the Contractor to revise the plan. Directions for revisions will be in writing and include detailed comments. The Engineer will notify the Contractor of the approval or rejection of a submitted or revised plan within 15 days of receipt of that plan.

In the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays."

**51-1.17A(2) Materials**

Before using methacrylate resin, a Material Safety Data Sheet shall be submitted for each shipment of resin.

Methacrylate resin shall be low odor and have a high molecular weight. Before adding initiator, the resin shall have a maximum volatile content of 30 percent when tested in conformance with the requirements in ASTM Designation: D 2369, and shall conform to the following:

PROPERTY	REQUIREMENT	TEST METHOD
* Viscosity	0.025 Pa·s, maximum, (Brookfield RVT with UL adaptor, 50 RPM at 25°C	ASTM D 2196
* Specific Gravity	0.90 minimum, at 25°C	ASTM D 1475
* Flash Point	82°C, minimum	ASTM D 3278
* Vapor Pressure	1.0 mm Hg, maximum, at 25°C	ASTM D 323
Tack-free Time	400 minutes, maximum, at 25°C	Specimen prepared per California Test 551
PCC Saturated Surface-Dry Bond Strength	3.5 MPa, minimum at 24 hours and 21±1°C	California Test 551
* Test shall be performed before adding initiator.		

**51-1.17A(3) Testing**

The Contractor shall allow 20 days for sampling and testing by the Engineer of the methacrylate resin before proposed use. If bulk resin is to be used, the Contractor shall notify the Engineer in writing at least 15 days before the delivery of the bulk resin to the job site. Bulk resin is any resin stored in containers in excess of 209 liters.

Before starting production treatment, the Contractor shall treat a test area of approximately 50 square meters that is within the project limits and at a location approved by the Engineer. When available the test area shall be outside of the traveled way. Weather and pavement conditions during the test treatment shall be similar to those expected on the deck. Equipment used for testing shall be similar to those used for deck treating operations.

During test and production deck treatment, test tiles shall be used to evaluate the resin cure time. The Contractor shall coat at least one 102 mm x 102 mm commercial quality smooth glazed tile for each batch of methacrylate resin. The coated tile shall be placed adjacent to the corresponding treated area. Sand shall not be applied to the test tiles.

The acceptance criteria for a treated area is as follows:

1. The test tiles are dry to the touch.
2. The treated deck surface is tack free (non-oily).
3. The sand cover adheres and resists brushing by hand.
4. Excess sand has been removed by vacuuming or sweeping.
5. The coefficient of friction is at least 0.35 when tested in conformance with California Test 342.

If a test or production area fails to meet the acceptance criteria, as determined by the Engineer, the treatment will be rejected, and the treatment shall be removed and replaced until the area complies with the acceptance criteria.

#### **51-1.17A(4) Construction**

Equipment shall be fitted with suitable traps, filters, drip pans, or other devices as necessary to prevent oil or other deleterious material from being deposited on the deck.

Before deck treatment with methacrylate resin, the bridge deck surface shall be cleaned by abrasive blasting, and all loose material shall be blown from visible cracks using high-pressure air. Concrete curing seals shall be cleaned from the deck surface to be treated, and the deck shall be dry when blast cleaning is performed. If the deck surface becomes contaminated at any time before placing the resin, the deck surface shall be cleaned by abrasive blasting.

Where abrasive blasting is being performed within 3 m of a lane occupied by public traffic, the residue including dust shall be removed immediately after contact between the abrasive and the surface being treated. The removal shall be by a vacuum attachment operating concurrently with the abrasive blasting operation.

A compatible promoter/initiator system shall be capable of providing the resin gel time range shown on the placement plan. Gel time shall be adjusted to compensate for the changes in temperature throughout treatment application.

Resin shall be applied by machine and by using a two-part resin system with a promoted resin for one part and an initiated resin for the other part. This two-part resin system shall be combined at equal volumes to the spray bars through separate positive displacement pumps. Combining of the 2 components shall be by either static in-line mixers or by external intersecting spray fans. The pump pressure at the spray bars shall not be great enough to cause appreciable atomization of the resin. Compressed air shall not be used to produce the spray. A shroud shall be used to enclose the spray bar apparatus.

At the Contractor's option, manual application may be used. For manual application, (1) the quantity of resin mixed with promoter and initiator shall be limited to 20 L at a time, and (2) the resin shall be distributed by squeegees and brooms within 10 minutes after application.

The Contractor shall apply methacrylate resin only to the specified area. Barriers, railing, joints, and drainage facilities shall be adequately protected to prevent contamination by the treatment material. Contaminated items shall be repaired at the Contractor's expense.

The relative humidity shall be less than 90 percent at the time of treatment. The prepared area shall be dry and the surface temperature shall be at least 10°C, and not more than 38°C when the resin is applied. The rate of application of promoted/initiated resin shall be 2.2 square meter per liter; the exact rate shall be determined by the Engineer.

The deck surfaces to be treated shall be completely covered with resin so the resin penetrates and fills all cracks. The resin shall be applied within 5 minutes after complete mixing. A significant increase in viscosity shall be cause for rejection. Excess material shall be redistributed by squeegees or brooms within 10 minutes after application. For textured deck surfaces, including grooved surfaces, excess material shall be removed from the texture indentations.

After the resin has been applied, at least 20 minutes shall elapse before applying sand. The sand shall be commercial quality dry blast sand. At least 95 percent of the sand shall pass the 2.36-mm sieve and at least 95 percent shall be retained on the 850-µm sieve. The sand shall be applied at a rate of approximately one kilogram per square meter or until refusal as determined by the Engineer.

Traffic will not be allowed on treated areas until the acceptance criteria has been met as determined by the Engineer.

#### **In Section 51-1.18C replace the 2nd paragraph with:**

When Class 2 surface finish (gun finish) is specified, ordinary surface finish shall first be completed. The concrete surfaces shall then be abrasive blasted to a rough texture and thoroughly washed down with water. While the washed surfaces are damp, but not wet, a finish coating of machine applied mortar, approximately 6 mm thick, shall be applied in not less than 2 passes. The coating shall be pneumatically applied and shall consist of either (1) sand, cementitious material, and water mechanically mixed prior to its introduction to the nozzle or (2) premixed sand and cementitious material to which water is added prior to its expulsion from the nozzle. The use of admixtures shall be subject to the approval of the Engineer as provided in Section 90, "Portland Cement Concrete."

Unless otherwise specified, supplementary cementitious materials will not be required. The proportion of cementitious material to sand shall be not less than one to 4, unless otherwise directed by the Engineer. Sand shall be of a grading suitable for the purpose intended. The machines shall be operated and the coating shall be applied in conformance with standard practice. The coating shall be firmly bonded to the concrete surfaces on which it is applied.

**In Section 51-1.18C replace the 5th paragraph with:**

When surfaces to be finished are in pedestrian undercrossings, the sand shall be silica sand and the cementitious material shall be standard white portland cement.

**In Section 51-1.23 replace the 14th paragraph with:**

Full compensation for drilling holes for dowels and grouting dowels in drilled holes; furnishing and placing mortar for mortaring spaces and recesses in and between precast members; furnishing and placing grit for walkways, stair treads and landings; furnishing and placing expansion joint filler, sheet packing, board fillers, elastomeric bearing pads, sliding joints, sliding bearings and preformed fabric pads; and grinding or grooving, as required, shall be considered as included in the contract prices paid for the various items of concrete work and no additional compensation will be allowed therefor.

**In Section 51-1.23 add after the 16th paragraph:**

Full compensation for deck crack treatment, including execution of the public safety plan, shall be considered as included in the contract price paid per cubic yard for structural concrete, bridge, and no additional compensation will be allowed therefor.

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**SECTION 52 REINFORCEMENT**

**(Issued 12-07-07)**

**In Section 52-1.02A replace the 1st paragraph with:**

Reinforcing bars shall be low-alloy steel deformed bars conforming to the requirements in ASTM Designation: A 706/A 706M, except that deformed or plain billet-steel bars conforming to the requirements in ASTM Designation: A 615/A 615M, Grade 280 or 420, may be used as reinforcement in the following 5 categories:

- A. Slope and channel paving,
- B. Minor structures,
- C. Sign and signal foundations (pile and spread footing types),
- D. Roadside rest facilities, and
- E. Concrete barrier Type 50 and Type 60 series and temporary railing.

**In Section 52-1.04 replace the 3rd paragraph with:**

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall also be furnished for each shipment of epoxy-coated bar reinforcement or wire reinforcement certifying that the coated reinforcement conforms to the requirements in ASTM Designation: A 775/A 775M or A 884/A 884M respectively, and the provisions in Section 52-1.02B, "Epoxy-coated Reinforcement." The Certificate of Compliance shall include all of the certifications specified in ASTM Designation: A 775/A 775M or A 884/A 884M respectively.

**In Section 52-1.06 replace the 3rd paragraph with:**

Hooks and bends shall conform to the provisions of the Building Code Requirements for Structural Concrete of the American Concrete Institute.

**In Section 52-1.07 in the 3rd paragraph, delete item C**

**In Section 52-1.07 replace the 11th paragraph with:**

Attention is directed to the provisions in Section 7-1.09, "Public Safety." Whenever a portion of an assemblage of bar reinforcing steel that is not encased in concrete exceeds 6 m in height, the Contractor shall submit to the Engineer for approval, in accordance with the provisions in Section 5-1.02, "Plans and Working Drawings," working drawings and design calculations for the temporary support system to be used. The working drawings and design calculations shall be signed by an engineer who is registered as a Civil Engineer in the State of California. The temporary support system shall be designed to resist all expected loads and shall be adequate to prevent collapse or overturning of the assemblage. If the installation of forms or other work requires revisions to or temporary release of any portion of the temporary support system, the working drawings shall show the support system to be used during each phase of construction. The minimum horizontal wind load to be applied to the bar reinforcing steel assemblage, or to a combined assemblage of reinforcing steel and forms, shall be the sum of the products of the wind impact area and the applicable wind pressure value for each height zone. The wind impact area is the total projected area of the cage normal to the direction of the applied wind. Wind pressure values shall be determined from the following table:

Height Zone (Meters above ground)	Wind Pressure Value (Pa)
0-9.0	960
9.1-15.0	1200
15.1-30.0	1440
Over 30	1675

**Replace Section 52-1.08 with:**

**52-1.08 SPLICING**

Splices of reinforcing bars shall consist of lap splices, service splices, or ultimate butt splices.

Splicing of reinforcing bars will not be permitted at a location designated on the plans as a "No-Splice Zone." At the option of the Contractor, reinforcing bars may be continuous at locations where splices are shown on the plans. The location of splices, except where shown on the plans, shall be determined by the Contractor using available commercial lengths where practicable.

Unless otherwise shown on the plans, splices in adjacent reinforcing bars at any particular section shall be staggered. The minimum distance between staggered lap splices or mechanical lap splices shall be the same as the length required for a lap splice in the largest bar. The minimum distance between staggered butt splices shall be 600 mm, measured between the midpoints of the splices along a line which is centered between the axes of the adjacent bars.

**52-1.08A Lap Splicing Requirements**

Splices made by lapping shall consist of placing reinforcing bars in contact and wiring them together, maintaining the alignment of the bars and the minimum clearances. Should the Contractor elect to use a butt welded or mechanical splice at a location not designated on the plans as requiring a service or ultimate butt splice, this splice shall conform to the testing requirements for service splice.

Reinforcing bars shall not be spliced by lapping at locations where the concrete section is not sufficient to provide a minimum clear distance of 50 mm between the splice and the nearest adjacent bar. The clearance to the surface of the concrete specified in Section 52-1.07, "Placing," shall not be reduced.

Reinforcing bars Nos. 43 and 57 shall not be spliced by lapping.

Where ASTM Designations: A 615/A 615M, Grade 420 or A 706/A 706M reinforcing bars are required, the length of lap splices shall be as follows: Reinforcing bars No. 25 or smaller shall be lapped at least 45 diameters of

the smaller bar joined; and reinforcing bars Nos. 29, 32, and 36 shall be lapped at least 60 diameters of the smaller bar joined, except when otherwise shown on the plans.

Where ASTM Designation: A 615/A 615M, Grade 280 reinforcing bars are permitted, the length of lap splices shall be as follows: Reinforcing bars No. 25 or smaller shall be lapped at least 30 diameters of the smaller bar joined; and reinforcing bars Nos. 29, 32, and 36 shall be lapped at least 45 diameters of the smaller bar joined, except when otherwise shown on the plans.

Splices in bundled bars shall conform to the following:

- A. In bundles of 2 bars, the length of the lap splice shall be the same as the length of a single bar lap splice.
- B. In bundles of 3 bars, the length of the lap splice shall be 1.2 times the length of a single bar lap splice.

Welded wire fabric shall be lapped such that the overlap between the outermost cross wires is not less than the larger of:

- A. 150 mm,
- B. The spacing of the cross wires plus 50 mm, or
- C. The numerical value of the longitudinal wire size (MW-Size Number) times 370 divided by the spacing of the longitudinal wires in millimeters.

#### **52-1.08B Service Splicing and Ultimate Butt Splicing Requirements**

Service splices and ultimate butt splices shall be either butt welded or mechanical splices, shall be used at the locations shown on the plans, and shall conform to the requirements of these specifications and the special provisions.

##### **52-1.08B(1) Mechanical Splices**

Mechanical splices to be used in the work shall be on the Department's current prequalified list before use. The prequalified list can be obtained from the Department's internet site listed in the special provisions or by contacting the Transportation Laboratory directly.

When tested in conformance with the requirements in California Test 670, the total slip shall not exceed the values listed in the following table:

Reinforcing Bar Number	Total Slip (µm)
13	250
16	250
19	250
22	350
25	350
29	350
32	450
36	450
43	600
57	750

Slip requirements shall not apply to mechanical lap splices, splices that are welded, or splices that are used on hoops.

Splicing procedures shall be in conformance with the manufacturer's recommendations, except as modified in this section. Splices shall be made using the manufacturer's standard equipment, jigs, clamps, and other required accessories.

Splice devices shall have a clear coverage of not less than 40 mm measured from the surface of the concrete to the outside of the splice device. Stirrups, ties, and other reinforcement shall be adjusted or relocated, and additional reinforcement shall be placed, if necessary, to provide the specified clear coverage to reinforcement.

The Contractor shall furnish the following information for each shipment of splice material in conformance with the provisions in Section 6-1.07, "Certificates of Compliance:"

- A. The type or series identification of the splice material including tracking information for traceability.

- B. The bar grade and size number to be spliced.
- C. A copy of the manufacturer's product literature giving complete data on the splice material and installation procedures.
- D. A statement that the splicing systems and materials used in conformance with the manufacturer's installation procedures will develop the required tensile strengths, based on the nominal bar area, and will conform to the total slip requirements and the other requirements in these specifications.
- E. A statement that the splice material conforms to the type of mechanical splice in the Department's current prequalified list.

**52-1.08B(2) Butt Welded Splices**

Except for resistance butt welds, butt welded splices of reinforcing bars shall be complete joint penetration butt welds conforming to the requirements in AWS D 1.4, and these specifications.

Welders and welding procedures shall be qualified in conformance with the requirements in AWS D 1.4.

Only the joint details and dimensions as shown in Figure 3.2, "Direct Butt Joints," of AWS D 1.4, shall be used for making complete joint penetration butt welds of bar reinforcement. Split pipe backing shall not be used.

Butt welds shall be made with multiple weld passes using a stringer bead without an appreciable weaving motion. The maximum stringer bead width shall be 2.5 times the diameter of the electrode and slagging shall be performed between each weld pass. Weld reinforcement shall not exceed 4 mm in convexity.

Electrodes used for welding shall meet the minimum Charpy V-notch impact requirement of 27°J at -20°C.

For welding of bars conforming to the requirements of ASTM Designation: A 615/A 615M, Grade 280 or Grade 420, the requirements of Table 5.2, "Minimum Preheat and Interpass Temperatures," of AWS D 1.4 are superseded by the following:

The minimum preheat and interpass temperatures shall be 200°C for Grade 280 bars and 300°C for Grade 420 bars. Immediately after completing the welding, at least 150 mm of the bar on each side of the splice shall be covered by an insulated wrapping to control the rate of cooling. The insulated wrapping shall remain in place until the bar has cooled below 90°C.

When welding different grades of reinforcing bars, the electrode shall conform to Grade 280 bar requirements and the preheat shall conform to the Grade 420 bar requirements.

In the event that any of the specified preheat, interpass, and post weld cooling temperatures are not met, all weld and heat affected zone metal shall be removed and the splice rewelded.

Welding shall be protected from air currents, drafts, and precipitation to prevent loss of heat or loss of arc shielding. The method of protecting the welding area from loss of heat or loss of arc shielding shall be subject to approval by the Engineer.

Reinforcing bars shall not be direct butt spliced by thermite welding.

Procedures to be used in making welded splices in reinforcing bars, and welders employed to make splices in reinforcing bars, shall be qualified by tests performed by the Contractor on sample splices of the type to be used, before making splices to be used in the work.

**52-1.08B(3) Resistance Butt Welds**

Shop produced resistance butt welds shall be produced by a fabricator who is approved by the Transportation Laboratory. The list of approved fabricators can be obtained from the Department's internet site or by contacting the Transportation Laboratory directly.

Before manufacturing hoops using resistance butt welding, the Contractor shall submit to the Engineer the manufacturer's Quality Control (QC) manual for the fabrication of hoops. As a minimum, the QC manual shall include the following:

- A. The pre-production procedures for the qualification of material and equipment.
- B. The methods and frequencies for performing QC procedures during production.
- C. The calibration procedures and calibration frequency for all equipment.
- D. The welding procedure specification (WPS) for resistance welding.
- E. The method for identifying and tracking lots.



### **52-1.08C Service Splice and Ultimate Butt Splice Testing Requirements**

The Contractor shall designate in writing a splicing Quality Control Manager (QCM). The QCM shall be responsible directly to the Contractor for 1) the quality of all service and ultimate butt splicing including the inspection of materials and workmanship performed by the Contractor and all subcontractors; and 2) submitting, receiving, and approving all correspondence, required submittals, and reports regarding service and ultimate splicing to and from the Engineer.

The QCM shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors, who will provide other services or materials for the project. The QCM may be an employee of the Contractor.

Testing on prequalification and production sample splices shall be performed at the Contractor's expense, at an independent qualified testing laboratory. The laboratory shall not be employed or compensated by any subcontractor, or by other persons or entities hired by subcontractors who will provide other services or materials for the project, and shall have the following:

- A. Proper facilities, including a calibrated tensile testing machine capable of breaking the largest size of reinforcing bar to be tested.
- B. A device for measuring the total slip of the reinforcing bars across the splice to the nearest 25  $\mu\text{m}$ , that, when placed parallel to the longitudinal axis of the bar is able to simultaneously measure movement across the splice at 2 locations 180 degrees apart.
- C. Operators who have received formal training for performing the testing requirements of ASTM Designation: A 370 and California Test 670.
- D. A record of annual calibration of testing equipment performed by an independent third party that has 1) standards that are traceable to the National Institute of Standards and Technology, and 2) a formal reporting procedure, including published test forms.

The Contractor shall provide samples for quality assurance testing in conformance with the provisions in these specifications and the special provisions.

Prequalification and production sample splices and testing shall conform to California Test 670 and these specifications.

The Contractor shall ensure that sample splices are properly secured and transported to the testing laboratory in such a manner that no alterations to the physical conditions occur during transportation. Sample splices shall be tested in the same condition as received. No modifications to the sample splices shall be made before testing.

Each set or sample splice, as defined herein, shall be identified as representing either a prequalification or production test sample splice.

For the purpose of production testing, a lot of either service splices or ultimate butt splices is defined as 1) 150, or fraction thereof, of the same type of mechanical splices used for each bar size and each bar deformation pattern that is used in the work, or 2) 150, or fraction thereof, of complete joint penetration butt welded splices or resistance butt welded splices for each bar size used in the work. If different diameters of hoop reinforcement are shown on the plans, separate lots shall be used for each different hoop diameter.

Whenever a lot of splices is rejected, the rejected lot and subsequent lots of splices shall not be used in the work until 1) the QCM performs a complete review of the Contractor's quality control process for these splices, 2) a written report is submitted to the Engineer describing the cause of failure for the splices in this lot and provisions for preventing similar failures in future lots, and 3) the Engineer has provided the Contractor with written notification that the report is acceptable. The Engineer shall have 3 working days after receipt of the report to provide notification to the Contractor. In the event the Engineer fails to provide notification within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in providing notification, the Contractor will be compensated for any resulting loss, and an extension of time will be granted in the same manner as provided for in Section 8-1.09, "Right of Way Delays."

#### **52-1.08C(1) Splice Prequalification Report**

Before using any service splices or ultimate butt splices in the work, the Contractor shall submit a Splice Prequalification Report. The report shall include splice material information, names of the operators who will be performing the splicing, and descriptions of the positions, locations, equipment, and procedures that will be used in the work.

The Splice Prequalification Report shall also include certifications from the fabricator for prequalifications of operators and procedures based on sample tests performed no more than 2 years before submitting the report. Each

operator shall be certified by performing 2 sample splices for each bar size of each splice type that the operator will be performing in the work. For deformation-dependent types of splice devices, each operator shall be certified by performing 2 additional samples for each bar size and deformation pattern that will be used in the work.

Prequalification sample splices shall be tested by an independent qualified testing laboratory and shall conform to the appropriate production test criteria and slip requirements specified herein. When epoxy-coated reinforcement is required, resistance butt welded sample splices shall have the weld flash removed by the same procedure as will be used in the work, before coating and testing. The Splice Prequalification Report shall include the certified test results for all prequalification sample splices.

The QCM shall review and approve the Splice Prequalification Report before submitting it to the Engineer for approval. The Contractor shall allow 2 weeks for the review and approval of a complete report before performing any service splicing or ultimate butt splicing in the work. In the event the Engineer fails to complete the review within the time allowed, and in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays."

#### **52-1.08C(2) Service Splice Test Criteria**

Service production and quality assurance sample splices shall be tensile tested in conformance with the requirements in ASTM Designation: A 370 and California Test 670 and shall develop a minimum tensile strength of not less than 550 MPa.

#### **52-1.08C(2)(a) Production Test Requirements for Service Splices**

Production tests shall be performed by the Contractor's independent laboratory for all service splices used in the work. A production test shall consist of testing 4 sample splices prepared for each lot of completed splices. The samples shall be prepared by the Contractor using the same splice material, position, operators, location, and equipment, and following the same procedure as used in the work.

At least one week before testing, the Contractor shall notify the Engineer in writing of the date when and the location where the testing of the samples will be performed.

The 4 samples from each production test shall be securely bundled together and identified with a completed sample identification card before shipment to the independent laboratory. The card will be furnished by the Engineer. Bundles of samples containing fewer than 4 samples of splices shall not be tested.

Before performing any tensile tests on production test sample splices, one of the 4 samples shall be tested for, and shall conform to, the requirements for total slip. Should this sample not meet the total slip requirements, one retest, in which the 3 remaining samples are tested for total slip, will be allowed. Should any of the 3 remaining samples not conform to the total slip requirements, all splices in the lot represented by this production test will be rejected.

If 3 or more sample splices from a production test conform to the provisions in this Section 52-1.08C(2), "Service Splice Test Criteria," all splices in the lot represented by this production test will be considered acceptable.

Should only 2 sample splices from a production test conform to the provisions in this Section 52-1.08C(2), "Service Splice Test Criteria," one additional production test shall be performed on the same lot of splices. This additional production test shall consist of testing 4 samples splices that have been randomly selected by the Engineer and removed by the Contractor from the actual completed lot of splices. Should any of the 4 splices from this additional test fail to conform to these provisions, all splices in the lot represented by these production tests will be rejected.

If only one sample splice from a production test conforms to the provisions in this Section 52-1.08C(2), "Service Splice Test Criteria," all splices in the lot represented by this production test will be rejected.

If a production test for a lot fails, the Contractor shall repair or replace all reinforcing bars from which sample splices were removed before the Engineer selects additional splices from this lot for further testing.

#### **52-1.08C(2)(b) Quality Assurance Test Requirements for Service Splices**

For the first production test performed, and for at least one, randomly selected by the Engineer, of every 5 subsequent production tests, or portion thereof, the Contractor shall concurrently prepare 4 additional service quality assurance sample splices. These service quality assurance sample splices shall be prepared in the same manner as specified herein for service production sample splices.

These 4 additional quality assurance sample splices shall be shipped to the Transportation Laboratory for quality assurance testing. The 4 sample splices shall be securely bundled together and identified by location and contract number with weatherproof markings before shipment. Bundles containing fewer than 4 samples of splices will not be tested. Sample splices not accompanied by the supporting documentation required in Section 52-1.08B(1), for mechanical splices, or in Section 52-1.08B(3), for resistance butt welds, will not be tested.

Quality assurance testing will be performed in conformance with the requirements for service production sample splices in Section 52-1.08C(2)(a), "Production Test Requirements for Service Splices."

### **52-1.08C(3) Ultimate Butt Splice Test Criteria**

Ultimate production and quality assurance sample splices shall be tensile tested in conformance with the requirements described in ASTM Designation: A 370 and California Test 670.

A minimum of 1 control bar shall be removed from the same bar as, and adjacent to, all ultimate prequalification, production, and quality assurance sample splices. The lengths of control bars shall conform to the lengths specified for sample splices in California Test 670. The portion of adjacent bar remaining in the work shall also be identified with weatherproof markings that correspond to its adjacent control bar.

Each sample splice and its associated control bar shall be identified and marked as a set. Each set shall be identified as representing a prequalification, production, or quality assurance sample splice.

The portion of hoop reinforcing bar, removed to obtain a sample splice and control bar, shall be replaced using a prequalified ultimate mechanical butt splice, or the hoop shall be replaced in kind.

Reinforcing bars, other than hoops, from which sample splices are removed, shall be repaired using ultimate mechanical butt splices conforming to the provisions in Section 52-1.08C(1), "Splice Prequalification Report," or the bars shall be replaced in kind. These bars shall be repaired or replaced such that no splices are located in any "No Splice Zone" shown on the plans.

Ultimate production and quality assurance sample splices shall rupture in the reinforcing bar either: 1) outside of the affected zone or 2) within the affected zone, provided that the sample splice has achieved at least 95 percent of the ultimate tensile strength of the control bar associated with the sample splice. In addition, necking of the bar, as defined in California Test 670, shall occur at rupture regardless of whether the bar breaks inside or outside the affected zone.

The affected zone is the portion of the reinforcing bar where any properties of the bar, including the physical, metallurgical, or material characteristics, have been altered by fabrication or installation of the splice.

The ultimate tensile strength shall be determined for all control bars by tensile testing the bars to rupture, regardless of where each sample splice ruptures. If 2 control bars are tested for one sample splice, the bar with the lower ultimate tensile strength shall be considered the control bar.

### **52-1.08C(3)(a) Production Test Requirements for Ultimate Butt Splices**

Production tests shall be performed for all ultimate butt splices used in the work. A production test shall consist of testing 4 sets of sample splices and control bars removed from each lot of completed splices, except when quality assurance tests are performed.

After the splices in a lot have been completed, and the bars have been epoxy-coated when required, the QCM shall notify the Engineer in writing that the splices in this lot conform to the specifications and are ready for testing. Except for hoops, sample splices will be selected by the Engineer at the job site. Sample splices for hoops will be selected by the Engineer either at the job site or a fabrication facility.

After notification has been received, the Engineer will randomly select the 4 sample splices to be removed from the lot and place tamper-proof markings or seals on them. The Contractor shall select the adjacent control bar for each sample splice bar, and the Engineer will place tamper-proof markings or seals on them. These ultimate production sample splices and control bars shall be removed by the Contractor, and tested by an independent qualified testing laboratory.

At least one week before testing, the Contractor shall notify the Engineer in writing of the date when and the location where the testing of the samples will be performed.

A sample splice or control bar from any set will be rejected if a tamper-proof marking or seal is disturbed before testing.

The 4 sets from each production test shall be securely bundled together and identified with a completed sample identification card before shipment to the independent laboratory. The card will be furnished by the Engineer. Bundles of samples containing fewer than 4 sets of splices shall not be tested.

Before performing any tensile tests on production test sample splices, one of the 4 sample splices shall be tested for, and shall conform to, the requirements for total slip. Should this sample splice not meet these requirements, one

retest, in which the 3 remaining sample splices are tested for total slip, will be allowed. Should any of the 3 remaining sample splices not conform to these requirements, all splices in the lot represented by this production test will be rejected.

If 3 or more sample splices from a production test conform to the provisions in Section 52-1.08C(3), "Ultimate Butt Splice Test Criteria," all splices in the lot represented by this production test will be considered acceptable.

Should only 2 sample splices from a production test conform to the provisions in Section 52-1.08C(3), "Ultimate Butt Splice Test Criteria," one additional production test shall be performed on the same lot of splices. Should any of the 4 sample splices from this additional test fail to conform to these provisions, all splices in the lot represented by these production tests will be rejected.

If only one sample splice from a production test conforms to the provisions in Section 52-1.08C(3), "Ultimate Butt Splice Test Criteria," all splices in the lot represented by this production test will be rejected.

If a production test for a lot fails, the Contractor shall repair or replace all reinforcing bars from which sample splices were removed, complete in place, before the Engineer selects additional splices from this lot for further testing.

Production tests will not be required on repaired splices from a lot, regardless of the type of prequalified ultimate mechanical butt splice used to make the repair. However, should an additional production test be required, the Engineer may select any repaired splice for the additional production test.

#### **52-1.08C(3)(b) Quality Assurance Test Requirements for Ultimate Butt Splices**

For the first production test performed, and for at least one, randomly selected by the Engineer, of every 5 subsequent production tests, or portion thereof, the Contractor shall concurrently prepare 4 additional ultimate quality assurance sample splices along with associated control bars.

Each time 4 additional ultimate quality assurance sample splices are prepared, 2 of these quality assurance sample splice and associated control bar sets and 2 of the production sample splice and associated control bar sets, together, shall conform to the requirements for ultimate production sample splices in Section 52-1.08C(3)(a), "Production Test Requirements for Ultimate Butt Splices."

The 2 remaining quality assurance sample splice and associated control bar sets, along with the 2 remaining production sample splice and associated control bar sets shall be shipped to the Transportation Laboratory for quality assurance testing. The 4 sets shall be securely bundled together and identified by location and contract number with weatherproof markings before shipment. Bundles containing fewer than 4 sets will not be tested.

Quality assurance testing will be performed in conformance with the requirements for ultimate production sample splices in Section 52-1.08C(3)(a), "Production Test Requirements for Ultimate Butt Splices."

#### **52-1.08C(3)(c) Nondestructive Splice Tests**

When the specifications allow for welded sample splices to be taken from other than the completed lot of splices, the Contractor shall meet the following additional requirements.

Except for resistance butt welded splices, radiographic examinations shall be performed on 25 percent of all complete joint penetration butt welded splices from a production lot. The size of a production lot will be a maximum of 150 splices. The Engineer will select the splices which will compose the production lot and also the splices within each production lot to be radiographically examined.

All required radiographic examinations of complete joint penetration butt welded splices shall be performed by the Contractor in conformance with the requirements in AWS D 1.4 and these specifications.

Before radiographic examination, welds shall conform to the requirements in Section 4.4, "Quality of Welds," of AWS D 1.4.

Should more than 12 percent of the splices which have been radiographically examined in any production lot be defective, an additional 25 percent of the splices, selected by the Engineer from the same production lot, shall be radiographically examined. Should more than 12 percent of the cumulative total of splices tested from the same production lot be defective, all remaining splices in the lot shall be radiographically examined.

Additional radiographic examinations performed due to the identification of defective splices shall be at the Contractor's expense.

All defects shall be repaired in conformance with the requirements in AWS D 1.4.

The Contractor shall notify the Engineer in writing 48 hours before performing any radiographic examinations.

The radiographic procedure used shall conform to the requirements in AWS D1.1, AWS D1.4, and the following:

- A. Two exposures shall be made for each complete joint penetration butt welded splice. For each of the 2 exposures, the radiation source shall be centered on each bar to be radiographed. The first exposure shall be made with the radiation source placed at zero degrees from the top of the weld and perpendicular to the weld root and identified with a station mark of "0." The second exposure shall be at 90 degrees to the "0" station mark and shall be identified with a station mark of "90." When obstructions prevent a 90 degree placement of the radiation source for the second exposure, and when approved in writing by the Engineer, the source may be rotated, around the centerline of the reinforcing bar, a maximum of 25 degrees.
- B. For field produced complete joint penetration butt welds, no more than one weld shall be radiographed during one exposure. For shop produced complete joint penetration butt welds, if more than one weld is to be radiographed during one exposure, the angle between the root line of each weld and the direction to the radiation source shall be not less than 65 degrees.
- C. Radiographs shall be made by either X-ray or gamma ray. Radiographs made by X-ray or gamma rays shall have densities of not less than 2.3 nor more than 3.5 in the area of interest. A tolerance of 0.05 in density is allowed for densitometer variations. Gamma rays shall be from the iridium 192 isotope and the emitting specimen shall not exceed 4.45 mm in the greatest diagonal dimension.
- D. The radiographic film shall be placed perpendicular to the radiation source at all times; parallel to the root line of the weld unless source placement determines that the film must be turned; and as close to the root of the weld as possible.
- E. The minimum source to film distance shall be maintained so as to ensure that all radiographs maintain a maximum geometric unsharpness of 0.020 at all times, regardless of the size of the reinforcing bars.
- F. Penetrators shall be placed on the source side of the bar and perpendicular to the radiation source at all times. One penetrator shall be placed in the center of each bar to be radiographed, perpendicular to the weld root, and adjacent to the weld. Penetrator images shall not appear in the weld area.
- G. When radiography of more than one weld is being performed per exposure, each exposure shall have a minimum of one penetrator per bar, or 3 penetrators per exposure. When 3 penetrators per exposure are used, one penetrator shall be placed on each of the 2 outermost bars of the exposure, and the remaining penetrator shall be placed on a centrally located bar.
- H. An allowable weld buildup of 4 mm may be added to the total material thickness when determining the proper penetrator selection. No image quality indicator equivalency will be accepted. Wire penetrators or penetrator blocks shall not be used.
- I. Penetrators shall be sufficiently shimmed using a radiographically identical material. Penetrator image densities shall be a minimum of 2.0 and a maximum of 3.6.
- J. Radiographic film shall be Class 1, regardless of the size of reinforcing bars.
- K. Radiographs shall be free of film artifacts and processing defects, including, but not limited to, streaks, scratches, pressure marks or marks made for the purpose of identifying film or welding indications.
- L. Each splice shall be clearly identified on each radiograph and the radiograph identification and marking system shall be established between the Contractor and the Engineer before radiographic inspection begins. Film shall be identified by lead numbers only; etching, flashing or writing in identifications of any type will not be permitted. Each piece of film identification information shall be legible and shall include, as a minimum, the following information: Contractor's name, date, name of nondestructive testing firm, initials of radiographer, contract number, part number and weld number. The letter "R" and repair number shall be placed directly after the weld number to designate a radiograph of a repaired weld.
- M. Radiographic film shall be developed within a time range of one minute less to one minute more than the film manufacturer's recommended maximum development time. Sight development will not be allowed.
- N. Processing chemistry shall be done with a consistent mixture and quality, and processing rinses and tanks shall be clean to ensure proper results. Records of all developing processes and any chemical changes to the developing processes shall be kept and furnished to the Engineer upon request. The Engineer may request, at any time, that a sheet of unexposed film be processed in the presence of the Engineer to verify processing chemical and rinse quality.
- O. The results of all radiographic interpretations shall be recorded on a signed certification and a copy kept with the film packet.
- P. Technique sheets prepared in conformance with the requirements in ASME Boiler and Pressure Vessels Code, Section V, Article 2 Section T-291 shall also contain the developer temperature, developing time, fixing duration and all rinse times.

**52-1.08D Reporting Test Results**

A Production Test Report for all testing performed on each lot shall be prepared by the independent testing laboratory performing the testing and submitted to the QCM for review and approval. The report shall be signed by an engineer who represents the laboratory and is registered as a Civil Engineer in the State of California. The report shall include, as a minimum, the following information for each test: contract number, bridge number, lot number and location, bar size, type of splice, length of mechanical splice, length of test specimen, physical condition of test sample splice and any associated control bar, any notable defects, total measured slip, ultimate tensile strength of each splice, and for ultimate butt splices, limits of affected zone, location of visible necking area, ultimate tensile strength and 95 percent of this ultimate tensile strength for each control bar, and a comparison between 95 percent of the ultimate tensile strength of each control bar and the ultimate tensile strength of its associated splice.

The QCM must review, approve, and forward each Production Test Report to the Engineer for review before the splices represented by the report are encased in concrete. The Engineer will have 3 working days to review each Production Test Report and respond in writing after a complete report has been received. Should the Contractor elect to encase any splices before receiving notification from the Engineer, it is expressly understood that the Contractor will not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection. Should the Contractor elect to wait to encase splices pending notification by the Engineer, and in the event the Engineer fails to complete the review and provide notification within the time allowed, and if, in the opinion of the Engineer, the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays."

Quality assurance test results for each bundle of 4 sets or 4 samples of splices will be reported in writing to the Contractor within 3 working days after receipt of the bundle by the Transportation Laboratory. In the event that more than one bundle is received on the same day, 2 additional working days shall be allowed for providing test results for each additional bundle received. A test report will be made for each bundle received. Should the Contractor elect to encase splices before receiving notification from the Engineer, it is expressly understood that the Contractor will not be relieved of the responsibility for incorporating material in the work that conforms to the requirements of the plans and specifications. Material not conforming to these requirements will be subject to rejection. Should the Contractor elect to wait to encase splices pending notification by the Engineer, and in the event the Engineer fails to complete the review within the time allowed, and in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for any resulting loss, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays."

**In Section 52-1.11 after the 7th paragraph, add:**

If a portion or all of the reinforcing steel is epoxy-coated more than 480 air line kilometers from both Sacramento and Los Angeles, additional shop inspection expenses will be sustained by the State. Whereas it is and will be impracticable and extremely difficult to ascertain and determine the actual increase in these expenses, it is agreed that payment to the Contractor for furnishing the epoxy-coated reinforcement will be reduced \$5000 for each epoxy-coating facility located more than 480 air line kilometers from both Sacramento and Los Angeles and an additional \$3000 (\$8000 total) for each epoxy-coating facility located more than 4800 air line kilometers from both Sacramento and Los Angeles.

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**SECTION 53 SHOTCRETE**

**(Issued 11-02-07)**

**In Section 53-1.01 replace the 3rd paragraph with:**

The dry-mix process shall consist of delivering dry mixed aggregate and cementitious material pneumatically or mechanically to the nozzle body and adding water and mixing the materials in the nozzle body. The wet-mix

process shall consist of delivering mixed aggregate, cement, and water pneumatically to the nozzle and adding any admixture at the nozzle.

**In Section 53-1.02 replace the 1st, 2nd, 3rd and 4th paragraphs with:**

Cementitious material, fine aggregate, and mixing water shall conform to the provisions in Section 90, "Portland Cement Concrete."

Shotcrete to be mixed and applied by the dry-mix process shall consist of one part cementitious material to not more than 4.5 parts fine aggregate, thoroughly mixed in a dry state before being charged into the machine. Measurement may be either by volume or by mass. The fine aggregate shall contain not more than 6 percent moisture by mass.

Shotcrete to be mixed and applied by the wet-mix process shall consist of cementitious material, fine aggregate, and water and shall contain not less than 375 kilograms of cementitious material per cubic meter. A maximum of 30 percent pea gravel may be substituted for fine aggregate. The maximum size of pea gravel shall be such that 100 percent passes the 12.5 mm screen and at least 90 percent passes the 9.5 mm screen.

Admixtures may be added to shotcrete and shall conform to the provisions in Section 90-4, "Admixtures."

**In Section 53-1.04 in the 3rd paragraph, replace the 3rd subparagraph with:**

Aggregate and cementitious material that have been mixed for more than 45 minutes shall not be used unless otherwise permitted by the Engineer.

**Replace Section 53-1.07 with:**

**53-1.07 MEASUREMENT**

Quantities of shotcrete will be measured by the cubic meter computed from measurements, along the slope, of actual areas placed and the theoretical thickness shown on the plans. The Department does not pay for shotcrete placed outside the dimensions shown on the plans or to fill low foundation.

**Replace Section 53-1.08 with:**

**53-1.08 PAYMENT**

The contract price paid per cubic meter for shotcrete shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in placing shotcrete, including preparing the foundation, wire reinforcement, structure backfill, joint filling material, and if required by the plans, drains with sacked pervious backfill material, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

^^

**SECTION 55 STEEL STRUCTURES**  
**(Issued 05-02-08)**

**In Section 55-1.01 replace the 3rd paragraph with:**

Construction methods and equipment employed by the Contractor shall conform to the provisions in Section 7-1.02, "Load Limitations."

**In Section 55-1.01 replace the 4th paragraph with:**

Details of connections for highway bridges selected for use by the Contractor shall conform to the AASHTO LRFD Bridge Design Specifications with Caltrans Amendments.

Details of design selected by the Contractor, fabrication and workmanship, for steel railway bridges shall conform to the requirements of the Specifications for Steel Railway Bridges, for Fixed Spans Not Exceeding 400 Feet in Length of the AREMA, as set forth in the special provisions.

**In Section 55-1.05 replace the 3rd paragraph with:**

Construction methods and equipment employed by the Contractor shall conform to the provisions in Section 7-1.02, "Load Limitations."

**In Section 55-2.01 replace the 4th and 5th paragraphs with:**

All structural steel plate used for the fabrication of tension members, tension flanges, eyebars and hanger plates and for splice plates of tension members, tension flanges and eyebars shall meet the longitudinal Charpy V-notch impact value requirements specified herein. Sampling procedures shall conform to the requirements in ASTM Designation: A 673. The H (Heat) frequency of testing shall be used for structural steels conforming to the requirements in ASTM Designations: A 709/A 709M, Grades 36 [250], 50 [345], 50W [345W], and HPS 50W [345W]. The P (Piece) frequency of testing shall be used for structural steel conforming to the requirements in ASTM Designation: A 709/A 709M, Grades HPS 70W [485W], 100 [690], and 100W [690W]. Charpy V-notch impact values shall be determined in conformance with the requirements in ASTM Designation: E 23.

Charpy V-notch (CVN) impact values shall conform to the following minimum values for non fracture critical members:



Material Conforming to ASTM Designation: A 709/A 709M	CVN Impact Value (Joules at Temp.)
Grade 36 [250]	20 at 4°C
Grade 50 [345]* (50 mm and under in thickness)	20 at 4°C
Grade 50W [345W]* (50 mm and under in thickness)	20 at 4°C
Grade 50 [345]* (Over 50 mm to 100 mm in thickness)	27 at 4°C
Grade 50W [345W]* (Over 50 mm to 100 mm in thickness)	27 at 4°C
Grade HPS 50W [345W]* (100 mm and under in thickness)	27 at -12°C
Grade HPS 70W [485]* (100 mm and under in thickness)	34 at -23°C
Grade 100 [490] (65 mm and under in thickness)	34 at -18°C
Grade 100W [490W] (Over 65 mm to 100 mm in thickness)	48 at -18°C

\* If the yield point of the material exceeds 450 MPa, the temperature for the CVN impact value for acceptability shall be reduced 8°C for each increment of 70 MPa above 450 MPa.

#### Structural Steel Materials

Material	Specification
Structural steel:	
Carbon steel	ASTM: A 709/A 709M, Grade 36 [250] or {A 36/A 36M}a
High strength low alloy columbium vanadium steel	ASTM: A 709/A 709M, Grade 50 [345] or {A 572/A 572M, Grade 50 [345]}a
High strength low alloy structural steel	ASTM: A 709/A 709M, Grade 50W [345W], Grade HPS 50W [HSP 345W], or {A 588/A 588M}a
High strength low alloy structural steel plate	ASTM: A 709/A 709M, Grade HPS 70W [HPS 485W]
High-yield strength, quenched and tempered alloy steel plate suitable for welding	ASTM: A 709/A 709M, Grade 100 [690] and Grade 100W [690W], or {A 514/A 514M}a
Steel fastener components for general applications:	
Bolts and studs	ASTM: A 307
Headed anchor bolts	ASTM: A 307, Grade B, including S1 supplementary requirements
Nonheaded anchor bolts	ASTM: A 307, Grade C, including S1 supplementary requirements and S1.6 of AASHTO: M 314 supplementary requirements or AASHTO: M 314, Grade 36 or 55, including S1 supplementary requirements
High-strength bolts and studs	ASTM: A 449, Type 1
High-strength threaded rods	ASTM: A 449, Type 1
High-strength nonheaded anchor bolts	ASTM: A 449, Type 1

Nuts	ASTM: A 563, including Appendix X1b
Washers	ASTM: F 844
Components of high-strength steel fastener assemblies for use in structural steel joints:	
Bolts	ASTM: A 325, Type 1
Tension control bolts	ASTM: F 1852, Type 1
Nuts	ASTM: A 563, including Appendix X1b
Hardened washers	ASTM : F 436, Type 1, Circular, including S1 supplementary requirements
Direct tension indicators	ASTM: F 959, Type 325, zinc-coated
Carbon steel for forgings, pins and rollers	ASTM: A 668/A 668M, Class D
Alloy steel for forgings	ASTM: A 668/A 668M, Class G
Pin nuts	ASTM: A 36/A 36M
Carbon-steel castings	ASTM: A 27/A 27M, Grade 65-35, Class 1
Malleable iron castings	ASTM: A 47, Grade 32510 or A 47M, Grade 22010
Gray iron castings	ASTM: A 48, Class 30B
Carbon steel structural tubing	ASTM: A 500, Grade B or A 501
Steel pipe (Hydrostatic testing will not apply)	ASTM: A 53, Type E or S, Grade B; A 106, Grade B; or A 139, Grade B
Stud connectors	ASTM: A 108 and AASHTO/AWS D1.5

a Grades that may be substituted for the equivalent ASTM Designation: A 709 steel, at the Contractor's option, subject to the modifications and additions specified and to the requirements of A 709.

b Zinc-coated nuts that will be tightened beyond snug or wrench tight shall be furnished with a dry lubricant conforming to Supplementary Requirement S2 in ASTM Designation: A 563.

**In Section 55-2.02 in the 1st paragraph, replace the 1st sentence with:**

Unless otherwise specified or shown on the plans, all structural steel plates, shapes, and bars shall conform to ASTM Designation: A 709/A 709M, Grade 50 [345].

**In Section 55-3.05 replace the 1st paragraph with:**

Surfaces of bearing and base plates and other metal surfaces that are to come in contact with each other or with ground concrete surfaces or with asbestos sheet packing shall be flat to within one mm tolerance in 305 mm and to within 2 mm tolerance overall. Surfaces of bearing and base plates and other metal bearing surfaces that are to come in contact with preformed fabric pads, elastomeric bearing pads, or mortar shall be flat to within 3 mm tolerance in 305 mm and to within 5 mm tolerance overall.

**In Section 55-3.14, after the 9th paragraph add:**

If a torque multiplier is used in conjunction with a calibrated wrench as a method for tightening fastener assemblies to the required tension, both the multiplier and the wrench shall be calibrated together as a system. The same length input and output sockets and extensions that will be used in the work shall also be included in the calibration of the system. The manufacturer's torque multiplication ratio shall be adjusted during calibration of the system, such that when this adjusted ratio is multiplied by the actual input calibrated wrench reading, the product is a calculated output torque that is within 2 percent of the true output torque. When this system is used in the work to perform any installation tension testing, rotational capacity testing, fastener tightening, or tension verification, it shall be used, intact as calibrated.



Structural tubing shall be structural steel conforming to the requirements in ASTM Designation: A 500, Grade B.

Removable sign panel frames shall be constructed of structural steel conforming to the requirements in ASTM Designation: A 36/A 36M.

**Replace Section 56-1.02B with:**

**56-1.02B Sheets**

Sheets shall be carbon-steel sheets conforming to the requirements in ASTM Designation: A 1011/A 1011M, Designation SS, Grade 33[230].

Ribbed sheet metal for box beam-closed truss sign structures shall be fabricated from galvanized sheet steel conforming to the requirements in ASTM Designation: A 653/A 653M, Designation SS, Grade 33[230]. Sheet metal panels shall be G 165 coating designation in conformance with the requirements in ASTM Designation: A 653/A 653M.

**Replace Section 56-1.02F with:**

**56-1.02F Steel Walkway Gratings**

Steel walkway gratings shall be furnished and installed in conformance with the details shown on the plans and the following provisions:

- A. Gratings shall be the standard product of an established grating manufacturer.
- B. Material for gratings shall be structural steel conforming to the requirements in ASTM Designation: A 1011/A 1011M, Designation CS, Type B.
- C. For welded type gratings, each joint shall be full resistance welded under pressure, to provide a sound, completely beaded joint.
- D. For mechanically locked gratings, the method of fabrication and interlocking of the members shall be approved by the Engineer, and the fabricated grating shall be equal in strength to the welded type.
- E. Gratings shall be accurately fabricated and free from warps, twists, or other defects affecting their appearance or serviceability. Ends of all rectangular panels shall be square. The tops of the bearing bars and cross members shall be in the same plane. Gratings distorted by the galvanizing process shall be straightened.

**In Section 56-1.03 replace the 5th through the 13th paragraphs with:**

Clips, eyes, or removable brackets shall be affixed to all signs and all posts and shall be used to secure the sign during shipping and for lifting and moving during erection as necessary to prevent damage to the finished galvanized or painted surfaces. Brackets on tubular sign structures shall be removed after erection. Details of the devices shall be shown on the working drawings.

High-strength bolted connections, where shown on the plans, shall conform to the provisions in Section 55-3.14, "Bolted Connections," except that only fastener assemblies consisting of a high-strength bolt, nut, hardened washer, and direct tension indicator shall be used.

High-strength fastener assemblies, and any other bolts, nuts, and washers attached to sign structures shall be zinc-coated by the mechanical deposition process.

Nuts for high-strength bolts designated as snug-tight shall not be lubricated.

An alternating snugging and tensioning pattern for anchor bolts and high-strength bolted splices shall be used. Once tensioned, high-strength fastener components and direct tension indicators shall not be reused.

For bolt diameters less than 10 mm, the diameter of the bolt hole shall be not more than 0.80-mm larger than the nominal bolt diameter. For bolt diameters greater than or equal to 10 mm, the diameter of the bolt hole shall be not more than 1.6 mm larger than the nominal bolt diameter.

Sign structures shall be fabricated into the largest practical sections prior to galvanizing.

Ribbed sheet metal panels for box beam closed truss sign structures shall be fastened to the truss members by cap screws or bolts as shown on the plans, or by 4.76 mm stainless steel blind rivets conforming to Industrial Fasteners Institute, Standard IFI-114, Grade 51. The outside diameter of the large flange rivet head shall be not less

than 15.88 mm in diameter. Web splices in ribbed sheet metal panels may be made with similar type blind rivets of a size suitable for the thickness of material being connected.

Spalling or chipping of concrete structures shall be repaired by the Contractor at the Contractor's expense.

**In Section 56-1.03 after the 13th paragraph add:**

Overhead sign supports shall have an aluminum identification plate permanently attached near the base, adjacent to the traffic side on one of the vertical posts, using either stainless steel rivets or stainless steel screws. As a minimum, the information on the plate shall include the name of the manufacturer, the date of manufacture and the contract number.

**In Section 56-1.10 replace the 4th paragraph with:**

The contract price paid per kilogram for install sign structure of the type or types designated in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in installing sign structures, complete in place, including installing anchor bolt assemblies, removable sign panel frames, and sign panels and performing any welding, painting or galvanizing required during installation, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

**In Section 56-2.02B replace the 5th paragraph with:**

Douglas fir and Hem-Fir posts shall be treated in conformance with the provisions in Section 58, "Preservative Treatment of Lumber, Timber and Piling," and in conformance with AWPA Use Category System: UC4A, Commodity Specification A. Posts shall be incised and the minimum retention of preservative shall be as specified in AWPA Standards.

**In Section 56-2.03 replace the 4th paragraph with:**

Backfill material for metal posts shall consist of minor concrete conforming to the provisions in Section 90-10, "Minor Concrete," and shall contain not less than 275 kilograms of cementitious material per cubic meter.

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**SECTION 57: TIMBER STRUCTURES**

**(Issued 10-12-04)**

**In Section 57-1.02A replace the 2nd paragraph with:**

When preservative treatment of timber and lumber is required, the treatment shall conform to the provisions in Section 58, "Preservative Treatment of Lumber, Timber and Piling," and AWPA's Use Category 4B. The type of treatment to be used will be shown on the plans or specified in the special provisions.

^^

**SECTION 58: PRESERVATIVE TREATMENT OF LUMBER, TIMBER AND PILING**

**(Issued 11-18-05)**

**In Section 58-1.02 replace the 1st paragraph with:**

Timber, lumber, and piling shall be pressure treated after millwork is completed. Preservatives, treatment, and results of treatment shall conform to the requirements in AWPA Standards U1 and T1. Treatment of lumber and



**In Section 59-2.06 replace the 1st paragraph with:**

Dirt, loose rust and mill scale, or paint which is not firmly bonded to the surfaces shall be removed in conformance with the requirements in Surface Preparation Specification No. 2, "Hand Tool Cleaning," of the "SSPC: The Society for Protective Coatings." Edges of old remaining paint shall be feathered.

**In Section 59-2.12 replace the 3rd and 4th paragraphs with:**

Contact surfaces of stiffeners, railings, built up members or open seam exceeding 6 mils in width that would retain moisture, shall be caulked with polysulfide or polyurethane sealing compound conforming to the requirements in ASTM Designation: C 920, Type S, Grade NS, Class 25, Use O, or other approved material.

The dry film thickness of the paint will be measured in place with a calibrated Type 2 magnetic film thickness gage in conformance with the requirements in SSPC-PA 2, "Measurement of Dry Coating Thickness with Magnetic Gages," of the "SSPC: The Society for Protective Coatings," except that there shall be no limit to the number or location of spot measurements to verify compliance with specified thickness requirements.

**In Section 59-2.13 replace the 3rd paragraph with:**

Mechanical mixers shall be used in mixing the primer. After mixing, the zinc-rich primer shall be strained through a 0.6 to 0.25 mm screen or a double layer of cheesecloth immediately prior to or during pouring into the spray pot.

^^

**SECTION 64: PLASTIC PIPE  
(Issued 07-31-07)**

**In Section 64-1.06 replace the 1st paragraph with:**

At locations where pipe is to be backfilled with concrete as shown on the plans, the concrete backfill shall be constructed of minor concrete or Class 4 concrete conforming to the provisions in Section 90, "Portland Cement Concrete." Minor concrete shall contain not less than 250 kg of cementitious material per cubic meter. The concrete to be used will be designated in the contract item or shown on the plans.

**In Section 64-1.06 replace the 3rd paragraph with:**

The surface of the concrete backfill shall be broomed with a heavy broom to produce a uniform rough surface if hot mix asphalt is to be placed directly thereon.

^^

**SECTION 65: REINFORCED CONCRETE PIPE  
(Issued 07-31-07)**

**In Section 65-1.02 replace the 1st paragraph with:**

Cementitious material and aggregate shall conform to the provisions in Section 90-2, "Materials," except that mortar strengths relative to Ottawa sand and grading requirements shall not apply to the aggregate. Use of supplemental cementitious material shall conform to AASHTO Designation: M 170M.

**In Section 65-1.02A(1) in the 11th paragraph, replace item C with:**

- c. Cementitious material and aggregate for non-reinforced concrete pipe shall conform to the provisions in Section 65-1.02, "Materials."

**In Section 65-1.035 replace the 1st paragraph with:**

At locations where pipe is to be backfilled with concrete as shown on the plans, the concrete backfill shall be constructed of minor concrete or Class 4 concrete in conformance with the provisions in Section 90, "Portland Cement Concrete." Minor concrete shall contain not less than 225 kg of cementitious material per cubic meter. The concrete to be used will be designated in the contract item.

**In Section 65-1.035 replace the 3rd paragraph with:**

The surface of the concrete backfill shall be broomed with a heavy broom to produce a uniform rough surface if hot mix asphalt is to be placed directly thereon.

**In Section 65-1.06 in the 2nd paragraph, replace the 1st subparagraph with:**

Cement Mortar.- Mortar shall be composed of one part cementitious material and 2 parts sand by volume. Supplementary cementitious material will not be required.

^^

**SECTION 66 CORRUGATED METAL PIPE  
(Issued 07-31-07)**

**In Section 66-1.045 replace the 1st paragraph with:**

At locations where pipe is to be backfilled with concrete as shown on the plans, the concrete backfill shall be constructed of minor concrete or Class 4 concrete conforming to the provisions in Section 90, "Portland Cement Concrete." Minor concrete shall contain not less than 225 kg of cementitious material per cubic meter. The concrete to be used will be designated in the contract item or shown on the plans.

**In Section 66-1.045 replace the 3rd paragraph with:**

The surface of the concrete backfill shall be broomed with a heavy broom to produce a uniform rough surface if hot mix asphalt is to be placed directly thereon.

^^

**SECTION 68 SUBSURFACE DRAINS  
(Issued 07-31-07)**

**In Section 68-3.02D replace the 1st and 2nd paragraphs with:**

Concrete for splash pads shall be produced from minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 275 kg of cementitious material per cubic meter.  
Mortar placed where edge drain outlets and vents connect to drainage pipe and existing drainage inlets shall conform to the provisions in Section 51-1.135, "Mortar."



**In Section 68-3.03 replace the 13th paragraph with:**

Cement treated permeable material, which is not covered with hot mix asphalt within 12 hours after compaction of the permeable material, shall be cured by either sprinkling the material with a fine spray of water every 4 hours during daylight hours or covering the material with a white polyethylene sheet, not less than 6 mils thick. The above curing requirements shall begin at 7:00 a.m. on the morning following compaction of the cement treated permeable material and continue for the next 72 hours or until the material is covered with hot mix asphalt, whichever is less. The cement treated permeable material shall not be sprayed with water during the first 12 hours after compacting, but may be covered with the polyethylene sheet during the first 12 hours or prior to the beginning of the cure period.

**In Section 68-3.03 replace the 17th and 18th paragraphs with:**

Hot mix asphalt for backfilling trenches in existing paved areas shall be produced from commercial quality aggregates and asphalt and mixed at a central mixing plant. The aggregate shall conform to the 19 mm grading, or the 12.5 mm grading for Type A and Type B hot mix asphalt specified in Section 39-1.02E, "Aggregate." The amount of asphalt binder to be mixed with the aggregate shall be between 4 percent and 7 percent by weight of the dry aggregate, as determined by the Engineer.

Hot mix asphalt backfill shall be spread and compacted in approximately 2 equal layers by methods that will produce a hot mix asphalt surfacing of uniform smoothness, texture and density. Each layer shall be compacted before the temperature of the mixture drops below 120°C. Prior to placing the hot mix asphalt backfill, a tack coat of asphaltic emulsion conforming to the provisions in Section 94, "Asphaltic Emulsions," shall be applied to the vertical edges of existing pavement at an approximate rate of 0.25 liters per square meter.

**In Section 68-3.03 replace the 20th paragraph with:**

Type A pavement markers conforming to the details shown on the plans and the provisions in Section 85, "Pavement Markers," shall be placed on paved shoulders or dikes at outlet, vent and cleanout locations as directed by the Engineer. The waiting period for placing pavement markers on new hot mix asphalt surfacing will not apply.

**Replace Section 68-3.05 with:**

**68-3.05 PAYMENT**

The contract price paid per meter for plastic pipe (edge drain) of the size or sizes shown in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing edge drains complete in place, including excavation (and removal of any concrete deposits that may occur along the lower edge of the concrete pavement in Type 1 installations) and hot mix asphalt backfill for Type 1 edge drain installation, tack coat, filter fabric, and treated permeable material, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract price paid per meter for plastic pipe (edge drain outlet) of the size or sizes shown in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing edge drain outlets, vents and cleanouts complete in place, including outlet and vent covers, expansion plugs, pavement markers, concrete splash pads, connecting outlets and vents to drainage facilities, and excavation and backfill [aggregate base, hot mix asphalt, tack coat, and native material] for outlets, vents, and cleanouts to be installed in embankments and existing shoulders, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

^^

**SECTION 69 OVERSIDE DRAINS**

**(Issued 07-31-07)**

**In Section 69-1.01 replace the 1st paragraph with:**

This work shall consist of furnishing and installing entrance tapers, pipe downdrains, tapered inlets, flume downdrains, anchor assemblies, reducers, slip joints and hot mix asphalt overside drains to collect and carry surface



^^

**SECTION 72: SLOPE PROTECTION  
(Issued 11-18-05)**

**In Section 72-4.04 replace the 6th paragraph with:**

Pervious backfill material, if required by the plans, shall be placed as shown. A securely tied sack containing 0.03-m<sup>3</sup> of pervious backfill material shall be placed at each weep hole and drain hole. The sack material shall conform to the provisions in Section 88-1.03, "Filter Fabric."

^^

**SECTION 73 CONCRETE CURBS AND SIDEWALKS  
(Issued 07-31-07)**

**In Section 73-1.01 in the 2nd paragraph, replace item 2 with:**

- 2. Minor concrete shall contain not less than 275 kg of cementitious material per cubic meter except that when extruded or slip-formed curbs are constructed using 9.5-mm maximum size aggregate, minor concrete shall contain not less than 325 kg of cementitious material per cubic meter.

**In Section 73-1.06 replace the 15th paragraph with:**

Where hot mix asphalt or portland cement concrete pavements are to be placed around or adjacent to manholes, pipe inlets or other miscellaneous structures in sidewalk, gutter depression, island paving, curb ramps or driveway areas, the structures shall not be constructed to final grade until after the pavements have been constructed for a reasonable distance on each side of the structures.

^^

**SECTION 74 PUMPING PLANT EQUIPMENT  
(Issued 07-01-08)**

**In Section 74-1.02 delete the 2nd paragraph.**

^^

**SECTION 75 MISCELLANEOUS METAL  
(Issued 01-18-08)**

**In Section 75-1.02 in the 10th paragraph, replace the table with:**

Material	Specification
Steel bars, plates and shapes	ASTM Designation: A 36/A 36M or A 575, A 576 (AISI or M Grades 1016 through 1030)
Steel fastener components for general applications:	
Bolts and studs	ASTM Designation: A 307
Headed anchor bolts	ASTM Designation: A 307, Grade B, including S1 supplementary requirements
Nonheaded anchor bolts	ASTM Designation: A 307, Grade C, including S1 supplementary requirements and S1.6 of AASHTO Designation: M 314 supplementary requirements or AASHTO Designation: M 314, Grade 36 or 55, including S1 supplementary requirements
High-strength bolts and studs, threaded rods, and nonheaded anchor bolts	ASTM Designation: A 449, Type 1
Nuts	ASTM Designation: A 563, including Appendix X1*
Washers	ASTM Designation: F 844
Components of high-strength steel fastener assemblies for use in structural steel joints:	
Bolts	ASTM Designation: A 325, Type 1
Tension control bolts	ASTM Designation: F 1852, Type 1
Nuts	ASTM Designation: A 563, including Appendix X1*
Hardened washers	ASTM Designation: F 436, Type 1, Circular, including S1 supplementary requirements
Direct tension indicators	ASTM Designation: F 959, Type 325, zinc-coated
Stainless steel fasteners (Alloys 304 & 316) for general applications:	
Bolts, screws, studs, threaded rods, and nonheaded anchor bolts	ASTM Designation: F 593 or F 738M
Nuts	ASTM Designation: F 594 or F 836M
Washers	ASTM Designation: A 240/A 240M and ANSI B 18.22M
Carbon-steel castings	ASTM Designation: A 27/A 27M, Grade 65-35 [450-240], Class 1
Malleable iron castings	ASTM Designation: A 47, Grade 32510 or A 47M, Grade 22010
Gray iron castings	ASTM Designation: A 48, Class 30B
Ductile iron castings	ASTM Designation: A 536, Grade 65-45-12
Cast iron pipe	Commercial quality
Steel pipe	Commercial quality, welded or extruded
Other parts for general Applications	Commercial quality

\* Zinc-coated nuts that will be tightened beyond snug or wrench tight shall be furnished with a dyed dry lubricant conforming to Supplementary Requirement S2 in ASTM Designation: A 563.

**In Section 75-1.03 replace the 2nd paragraph with:**

Miscellaneous bridge metal shall consist of the following, except as further provided in Section 51-1.19, "Utility Facilities," and in the special provisions:

- A. Bearing assemblies, equalizing bolts and expansion joint armor in concrete structures.
- B. Expansion joint armor in steel structures.
- C. Manhole frames and covers, frames and grates, ladder rungs, guard posts and access door assemblies.
- D. Deck drains, area drains, retaining wall drains, and drainage piping, except drainage items identified as "Bridge Deck Drainage System" in the special provisions.

**In Section 75-1.03 replace the 7th paragraph with:**

Sheet steel for access doors shall be galvanized sheet conforming to the requirements in ASTM Designation: A 653/A 653M, Coating Designation Z600 {G210}.

**In Section 75-1.03 replace the 13th paragraph with:**

Concrete anchorage devices shall be mechanical expansion or resin capsule types installed in drilled holes or cast-in-place insert types. The anchorage devices shall be selected from the Department's Pre-Qualified Products List at:

[http://www.dot.ca.gov/hq/esc/approved\\_products\\_list](http://www.dot.ca.gov/hq/esc/approved_products_list)

The anchorage devices shall be a complete system, including threaded studs, hex nuts, and cut washers. Thread dimensions for externally threaded concrete anchorage devices prior to zinc coating, shall conform to the requirements in ANSI Standard: B1.1 having Class 2A tolerances or ANSI Standard: B1.13M having Grade 6g tolerances. Thread dimensions for internally threaded concrete anchorage devices shall conform to the requirements in ASTM A 563.

**In Section 75-1.03 replace the 18th paragraph with:**

Mechanical expansion anchors shall, when installed in accordance with the manufacturer's instructions and these specifications and tested in conformance with the requirements in California Test 681, withstand the application of a sustained tension test load of at least the following values for at least 48 hours with a movement not greater than 0.90 mm:

Stud Diameter (millimeters)	Sustained Tension Test Load (kilonewtons)
*18.01-21.00	22.2
15.01-18.00	18.2
12.01-15.00	14.2
9.01-12.00	9.34
6.00-9.00	4.23

\* Maximum stud diameter permitted for mechanical expansion anchors.

Resin capsule anchors shall, when installed in accordance with the manufacturer's instructions and these specifications and tested in conformance with the requirements in California Test 681, withstand the application of a sustained tension test load of at least the following values for at least 48 hours with a movement not greater than 0.25 mm:

Stud Diameter (millimeters)	Sustained Tension Test Load (kilonewtons)
29.01-33.00	137.9
23.01-29.00	79.6
21.01-23.00	64.1
18.01-21.00	22.2
15.01-18.00	18.2
12.01-15.00	14.2
9.01-12.00	9.34
6.00-9.00	4.23

At least 25 days before use, the Contractor shall submit one sample of each resin capsule anchor per lot to the Transportation Laboratory for testing. A lot of resin capsule anchors is 100 units, or fraction thereof, of the same brand and product name.

**In Section 75-1.03 in the 19th paragraph, replace the table with:**

Stud Diameter (millimeters)	Ultimate Tensile Load (kilonewtons)
30.01-33.00	112.1
27.01-30.00	88.1
23.01-27.00	71.2
20.01-23.00	51.6
16.01-20.00	32.0
14.01-16.00	29.4
12.00-14.00	18.7

**In Section 75-1.03, replace the 20th paragraph with:**

The Pre-Qualified Products List for concrete anchorage devices has been developed from data previously furnished by suppliers or manufacturers for each type and size. Approval of additional anchorage device types and sizes is contingent upon the Contractor submitting to the Engineer one sample of each type of concrete anchorage device, manufacturer's installation instructions, and certified results of tests, either by a private testing laboratory or the manufacturer, indicating compliance with the above requirements.

**In Section 75-1.03 in the 22nd paragraph, replace the table with:**

Installation Torque Values, (newton meters)

Stud Diameter (millimeters)	Shell Type Mechanical Expansion Anchors	Integral Stud Type Mechanical Expansion Anchors	Resin Capsule Anchors and Cast-in-Place Inserts
29.01-33.00	—	—	540
23.01-29.00	—	—	315
21.01-23.00	—	—	235
18.01-21.00	110	235	200
15.01-18.00	45	120	100
12.01-15.00	30	65	40
9.01-12.00	15	35	24
6.00-9.00	5	10	—

**In Section 75-1.03, replace the 24th paragraph with:**

Sealing compound, for caulking and adhesive sealing, shall be a polysulfide or polyurethane material conforming to the requirements in ASTM Designation: C 920, Type S, Grade NS, Class 25, Use O.



**In Section 81-1.02 replace the 5th paragraph with:**

At the option of the Contractor, the frame and cover for Type B and Type D survey monuments shall be fabricated from either cast steel or gray cast iron. The covers shall fit into the frames without rocking.

**In Section 81-1.02 replace the 7th paragraph with:**

Granular material for Type B and Type D survey monuments shall be gravel, crushed gravel, crushed rock or any combination thereof. Granular material shall not exceed 37.5 mm in greatest dimension.

^^

**SECTION 82: MARKERS AND DELINEATORS**

**(Issued 06-30-06)**

**In Section 82-1.02B replace the 1st paragraph with:**

Steel for metal posts shall conform to the requirements in ASTM Designation: A 36/A 36M. The posts shall be galvanized in conformance with the requirements in Section 75-1.05, "Galvanizing."

**In Section 82-1.02D replace the 3rd paragraph with:**

The zinc-coated steel sheet shall conform to the requirements in ASTM Designation: A 653/A 653M, Classification: Commercial Steel (CS Types A, B and C). The steel sheets shall be galvanized in conformance with the requirements in Section 75-1.05, "Galvanizing." The zinc-coated surface shall be prepared for painting in a manner designed to produce optimum paint adherence. The surface preparation shall be accomplished without damaging or removing the zinc coating. Any evidence of damage or removal of the zinc coating shall be cause for rejection of the entire lot.

**In Section 82-1.02D replace the 11th paragraph with:**

When tested in conformance with the requirements in California Test 671, the painted metal target plates shall, in general, have satisfactory resistance to weathering, humidity, salt spray and chemicals; the enamel coating shall have satisfactory adherence and impact resistance, a pencil lead hardness of HB minimum, 60° specular gloss of 80 percent minimum, an excitation purity of 3 percent maximum as received and after 1000 hours in an artificial weathering device in conformance with the requirements in ASTM Designation: G 155, Table X3.1, Cycle 1, and a daylight luminous directional reflectance ("Y" value) of 70 minimum.

**In Section 82-1.02F replace the 2nd paragraph with:**

Reflectors for flexible target plates on Type K object markers and target plates on Class 2 delineators, and reflectors for Class 1 delineators shall be made from impact resistant retroreflective sheeting as specified in the special provisions. The color of the retroreflective sheeting shall conform to the color designated on the plans and the Chromaticity Coordinates specified in ASTM Designation: D 4956, or the PR color number specified by the Federal Highway Administration's Color Tolerance Chart.

**In Section 82-1.02F replace the 4th paragraph with:**

The instrumental method of determining color shall conform to the requirements specified in ASTM Designation: D 4956. In the event of any dispute concerning the test results of instrumental testing, the visual test shall prevail.

^^



## **SECTION 83: RAILINGS AND BARRIERS**

**(Issued 08-17-07)**

### **In Section 83-1.02 replace the 7th paragraph with:**

Mortar shall conform to the provisions in Section 51-1.135, "Mortar," and shall consist of one part by volume of cementitious material and 3 parts of clean sand.

### **In Section 83-1.02B replace the 1st paragraph with:**

The rail elements, backup plates, terminal sections, end and return caps, bolts, nuts and other fittings shall conform to the requirements in AASHTO Designation: M 180, except as modified in this Section 83-1.02B and as specified in Section 83-1.02. The rail elements, backup plates, terminal sections, end and return caps shall conform to Class A, Type 1 W-Beam guard railing as shown in AASHTO Designation: M 180. The edges and center of the rail element shall contact each post block. Rail element joints shall be lapped not less than 316 mm and bolted. The rail metal, in addition to conforming to the requirements in AASHTO Designation: M 180, shall withstand a cold bend, without cracking, of 180 degrees around a mandrel of a diameter equal to 2.5 times the thickness of the plate.

### **In Section 83-1.02B replace the 9th paragraph with:**

The grades and species of wood posts and blocks shall be No. 1 timbers (also known as No. 1 structural) Douglas fir or No. 1 timbers Southern yellow pine. Wood posts and blocks shall be graded in conformance with the provisions in Section 57-2, "Structural Timber," of the Standard Specifications, except allowances for shrinkage after mill cutting shall in no case exceed 5 percent of the American Lumber Standards minimum sizes, at the time of installation.

### **In Section 83-1.02B replace the 11th paragraph with:**

After fabrication, wood posts and blocks shall be pressure treated in conformance with Section 58, "Preservative Treatment of Lumber, Timber and Piling," and AWPAs Use Category System: UC4A, Commodity Specification A.

### **In Section 83-1.02B replace the 12th paragraph with:**

If copper naphthenate, ammoniacal copper arsenate, chromated copper arsenate, ammoniacal copper zinc arsenate, ammoniacal copper quat or copper azole is used to treat the wood posts and blocks, the bolt holes shall be treated as follows:

- A. Before the bolts are inserted, bolt holes shall be filled with a grease, recommended by the manufacturer for corrosion protection, which will not melt or run at a temperature of 65°C.

### **In Section 83-1.02B replace the 24th paragraph with:**

End anchor assemblies and rail tensioning assemblies for metal beam guard railing shall be constructed as shown on the plans and shall conform to the following provisions:

1. An end anchor assembly (Type SFT) for metal beam guard railing shall consist of an anchor cable, an anchor plate, a wood post, a steel foundation tube, a steel soil plate and hardware.
2. An end anchor assembly (Type CA) for metal beam guard railing shall consist of an anchor cable, an anchor plate, a single anchor rod or double anchor rods, hardware and one concrete anchor.
3. A rail tensioning assembly for metal beam guard railing shall consist of an anchor cable, an anchor plate, and hardware.
4. The anchor plate, metal plates, steel foundation tubes and steel soil plate shall be fabricated of steel conforming to the requirements in ASTM Designation: A 36/A 36M.
5. The anchor rods shall be fabricated of steel conforming to the requirements in ASTM Designation: A 36/A 36M, A 441 or A 572, or ASTM Designation: A 576, Grades 1018, 1019, 1021 or 1026. The eyes shall be hot forged or formed with full penetration welds. After fabrication, anchor rods with eyes that have been formed with any part of the eye below 870°C during the forming operation or with eyes that have been

- closed by welding shall be thermally stress relieved prior to galvanizing. The completed anchor rod, after galvanizing, shall develop a strength of 220 kN.
6. In lieu of built-up fabrication of anchor plates as shown on the plans, anchor plates may be press-formed from steel plate, with or without welded seams.
  7. All bolts and nuts shall conform to the requirements in ASTM Designation: A 307, unless otherwise specified in the special provisions or shown on the plans.
  8. Anchor cable shall be 19 mm preformed, 6 x 19, wire strand core or independent wire rope core (IWRC), galvanized in conformance with the requirements in Federal Specification RR-W-410, right regular lay, manufactured of improved plow steel with a minimum breaking strength of 200 kN. Two certified copies of mill test reports of each manufactured length of cable used shall be furnished to the Engineer. The overall length of each cable anchor assembly shall be as shown on the plans, but shall be a minimum of 2 m.
  9. Where shown on the plans, cable clips and a cable thimble shall be used to attach cable to the anchor rod. Thimbles shall be commercial quality, galvanized steel. Cable clips shall be commercial quality drop forged galvanized steel.
  10. The swaged fitting shall be machined from hot-rolled bars of steel conforming to AISI Designation: C 1035, and shall be annealed suitable for cold swaging. The swaged fitting shall be galvanized before swaging. A lock pin hole to accommodate a 6 mm, plated, spring steel pin shall be drilled through the head of the swage fitting to retain the stud in proper position. The manufacturer's identifying mark shall be stamped on the body of the swage fitting.
  11. The 25 mm nominal diameter stud shall conform to the requirements in ASTM Designation: A 449 after galvanizing. Prior to galvanizing, a 10 mm slot for the locking pin shall be milled in the stud end.
  12. The swaged fittings, stud and nut assembly shall develop the specified breaking strength of the cable.
  13. The cable assemblies shall be shipped as a complete unit including stud and nut.
  14. Clevises shall be drop forged galvanized steel and shall develop the specified breaking strength of the cable.
  15. One sample of cable properly fitted with swaged fitting and right hand thread stud at both ends as specified above, including a clevis when shown on the plans, one meter in total length, shall be furnished the Engineer for testing.
  16. The portion of the anchor rod to be buried in earth shall be coated with a minimum 0.5 mm thickness of coal tar enamel conforming to AWWA Standard: C203 or a coal tar epoxy conforming to the requirements in Steel Structures Painting Council Paint Specification No. 16, Coal-Tar Epoxy-Polyimide Black Paint or Corps of Engineers Specification, Formula C-200a, Coal-Tar Epoxy Paint.
  17. Metal components of the anchor assembly shall be fabricated in conformance with good shop practice and shall be hot-dip galvanized in conformance with the provisions in Section 75-1.05, "Galvanizing."
  18. Anchor cables shall be tightened after the concrete anchor has cured for at least 5 days.
  19. Concrete used to construct anchors for end anchor assemblies shall be Class 3 or minor concrete conforming to the provisions in Section 90, "Portland Cement Concrete."
  20. Concrete shall be placed against undisturbed material of the excavated holes for end anchors. The top 300 mm of holes shall be formed, if required by the Engineer.
  21. Reinforcing steel in concrete anchors for end anchor assemblies shall conform to the provisions in Section 52, "Reinforcement."

**In Section 83-1.02D replace the 2nd paragraph with:**

Structural shapes, tubing, plates, bars, bolts, nuts, and washers shall be structural steel conforming to the provisions in Section 55-2, "Materials." Other fittings shall be commercial quality.

**In Section 83-1.02E replace the 2nd paragraph with:**

Pipe for posts and braces shall be standard steel pipe or pipe that conforms to the provisions in Section 80-4.01A, "Posts and Braces."

**In Section 83-1.02E, delete the 3rd paragraph**

**In Section 83-1.02E in the 7th paragraph, replace the 2nd sentence with:**

Cable shall be galvanized in conformance with the requirements in Federal Specification RR-W-410.

**In Section 83-1.02I replace the 5th paragraph with:**

Where shown on the plans, cables used in the frame shall be 8 mm in diameter, wire rope, with a minimum breaking strength of 22 kN and shall be galvanized in conformance with the requirements in Federal Specification RR-W-410.

**In Section 83-1.02I replace the 14th paragraph with:**

Chain link fabric shall be either 11-gage Type I zinc-coated fabric conforming to the requirements in AASHTO M 181 or 11-gage Type IV polyvinyl chloride (PVC) coated fabric conforming to the requirements in Federal Specification RR-F-191/1.

**In Section 83-1.03 replace the 2nd paragraph with:**

Except for metal beam guard railing within the pay limits of a terminal system end treatment or transition railing (Type WB), metal beam guard railing will be measured by the meter along the face of the rail element from end post to end post of the completed railing at each installation. The point of measurement at each end post will be the center of the bolt attaching the rail element to the end post.

**In Section 83-1.03 replace the 7th and 8th paragraphs with:**

The quantities of end anchor assemblies (Type SFT or Type CA) and rail tensioning assemblies will be measured as units determined from actual count. An end anchor assembly (Type CA) with 2 cables attached to one concrete anchor will be counted as one terminal anchor assembly (Type CA) for measurement and payment.

The quantities of return and end caps and the various types of terminal sections for metal beam guard railing will be determined as units from actual count.

**In Section 83-1.04 replace the 3rd and 4th paragraphs with:**

The contract unit prices paid for end anchor assembly (Type SFT), end anchor assembly (Type CA), and rail tensioning assembly shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in constructing the end anchor assemblies, complete in place, including drilling anchor plate bolt holes in rail elements, driving steel foundation tubes, excavating for concrete anchor holes and disposing of surplus material, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

The contract unit prices paid for return caps, end caps, and the various types of terminal sections for metal beam guard railing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing terminal sections, return and end caps, complete in place, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer.

**In Section 83-2.02B replace the 2nd paragraph with:**

Rail elements, backup plates, terminal connectors, terminal sections, and return caps shall conform to Class A, Type 1 three beam guard railing as shown in AASHTO Designation: M 180.

**In Section 83-2.02B replace the 14th paragraph with:**

All metal work shall be fabricated in the shop, and no punching, cutting or welding will be permitted in the field. Rail elements shall be lapped so that the exposed ends will not face approaching traffic. Terminal sections and return caps shall be installed in conformance with the manufacturer's recommendation.



**SECTION 84: TRAFFIC STRIPES AND PAVEMENT MARKINGS**

(Issued 07-21-06)

**In Section 84-2.02 replace the 1st paragraph with:**

The thermoplastic material shall conform to State Specification PTH-02SPRAY, PTH-02HYDRO or PTH-02ALKYD. Glass beads to be applied to the surface of the molten thermoplastic material shall conform to the requirements of State Specification 8010-004 (Type II).

**In Section 84-3.02 replace the 1st paragraph with:**

Paint for traffic stripes and pavement markings shall conform to the following State Specifications:

Paint Type	Color	State Specification No.
Waterborne Traffic Line	White, Yellow and Black	PTWB-01
Acetone-Based	White, Yellow and Black	PT-150VOC(A)
Waterborne Traffic Line for disabled persons' parking, and other curb markings	Blue, Red and Green	Federal Specification No. TT-P-1952D

**In Section 84-3.02 replace the 4th paragraph with:**

The kind of paint to be used (waterborne or acetone-based) shall be determined by the Contractor based on the time of year the paint is applied and local air pollution control regulations.

**In Section 84-3.05 replace the 1st paragraph with:**

Traffic stripes and pavement markings shall be applied only on dry surfaces and only during periods of favorable weather. Painting shall not be performed when the atmospheric temperature is below 5°C when using acetone-based paint or below 10°C when using water borne paint; when freshly painted surfaces may become damaged by rain, fog, or condensation; nor when it can be anticipated that the atmospheric temperature will drop below the aforementioned 5°C or 10°C temperatures during the drying period.

**In Section 84-3.05, delete the 3rd paragraph.**

**In Section 84-3.05 replace the 10th paragraph with:**

Paint to be applied in 2 coats shall be applied approximately as follows:

Paint Type	Square Meter Coverage Per Liter	
	First Coat	Second Coat
Waterborne Paint	6	6
Acetone-Based Paint	10	5

^^

**SECTION 85: PAVEMENT MARKERS**

**(Issued 07-31-07)**

**In Section 85-1.03 replace the 2nd through 5th paragraphs with:**

**Sampling**

Twenty markers selected at random will constitute a representative sample for each lot of markers. The lot size shall not exceed 25 000 markers.

**Tolerances**

Three test specimens will be randomly selected from the sample for each test and tested in conformance with these specifications. Should any one of the 3 specimens fail to conform with the requirements in these specifications, 6 additional specimens will be tested. The failure of any one of these 6 specimens shall be cause for rejection of the entire lot or shipment represented by the sample.

The entire sample of retroreflective pavement markers will be tested for reflectance. The failure of 10 percent or more of the original sampling shall be cause for rejection.

**Replace Section 85-1.04 with:**

**85-1.04 NON-REFLECTIVE PAVEMENT MARKERS**

Non-reflective pavement markers (Types A and AY) shall be, at the option of the Contractor, either ceramic or plastic conforming to these specifications.

The top surface of the marker shall be convex with a gradual change in curvature. The top, bottom and sides shall be free of objectionable marks or discoloration that will affect adhesion or appearance.

The bottom of markers shall have areas of integrally formed protrusions or indentations, which will increase the effective bonding surface area of adhesive. The bottom surface of the marker shall not deviate more than 1.5 mm from a flat surface. The areas of protrusion shall have faces parallel to the bottom of the marker and shall project approximately one mm from the bottom.

**In Section 85-1.04A, delete the 2nd through 4th paragraphs.**

**In Section 85-1.04A replace the 5th paragraph with:**

**Testing**

Tests shall be performed in conformance with the requirements in California Test 669.

Test	Test Description	Requirement
a	Bond strength	4.8 MPa, min.
b	Glaze thickness	180 µm, min.
c	Hardness	6 Moh, min.
d	Luminance factor, Type A, white markers only, glazed surface	75, min.
e	Yellowness index, Type A, white markers only, glazed surface	7, max.
f	Color-yellow, Type AY, yellow markers only. The chromaticity coordinates shall be within a color box defined in CTM 669	Pass
g	Compressive strength	6700 N, min.
h	Water absorption	2.0 %, max.
i	Artificial weathering, 500 hours exposure, yellowness index	20, max.

**Replace Section 85-1.04B with:**

**85-1.04B Non-Reflective Pavement Markers (Plastic)**

Plastic non-reflective pavement markers Types A and AY shall be, at the option of the Contractor, either polypropylene or acrylonitrile-butadiene-styrene (ABS) plastic type.

Plastic markers shall conform to the testing requirements specified in Section 85-1.04A, "Non-Reflective Pavement Markers (Ceramic)," except that Tests a, b, c, and h shall not apply. The plastic markers shall not be coated with substances that interfere with the ability of the adhesive bonding to the marker.

**In Section 85-1.05 replace the 6th and 7th paragraphs with:**

**Testing**

Tests shall be performed in conformance with the requirements in California Test 669.

Test Description	Requirement		
Bond strength <sup>a</sup>	3.4 MPa, min.		
Compressive strength <sup>b</sup>	8900 N, min.		
Abrasion resistance, marker must meet the respective specific intensity minimum requirements after abrasion.	Pass		
Water Soak Resistance	No delamination of the body or lens system of the marker nor loss of reflectance		
Reflectance	Specific Intensity		
	Clear	Yellow	Red
0° Incidence Angle, min.	3.0	1.5	0.75
20° Incidence Angle, min.	1.2	0.60	0.30
After one year field evaluation	0.30	0.15	0.08

- a. Failure of the marker body or filler material prior to reaching 3.4 MPa shall constitute a failing bond strength test.
- b. Deformation of the marker of more than 3 mm at a load of less than 8900 N or delamination of the shell and the filler material of more than 3 mm regardless of the load required to break the marker shall be cause for rejection of the markers as specified in Section 85-1.03, "Sampling, Tolerances and Packaging."

Pavement markers to be placed in pavement recesses shall conform to the above requirements for retroreflective pavement markers except that the minimum compressive strength requirement shall be 5338 N.

**In Section 85-1.05 delete the 8th paragraph.**

**In Section 85-1.06 replace the 6th paragraph with:**

Pavement markers shall not be placed on new hot mix asphalt surfacing or seal coat until the surfacing or seal coat has been opened to public traffic for a period of not less than 7 days when hot melt bituminous adhesive is used, and not less than 14 days when epoxy adhesive is used.

**In Section 85-1.06 replace the 8th paragraph with:**

Epoxy adhesive shall not be used to apply non-reflective plastic pavement markers.

**In Section 85-1.06 in the 14th paragraph, replace the 2nd sentence with:**

Cleaning shall be done by blast cleaning on all surfaces regardless of age or type, except that blast cleaning of clean, new hot mix asphalt and clean, new seal coat surfaces will not be required when hot melt bituminous adhesive is used.

**In Section 85-1.06 in the 14th paragraph, replace the 7th sentence with:**

Soft rags moistened with mineral spirits conforming to Army Mil-PRF-680A(1) or kerosene may be used, if necessary, to remove adhesive from exposed faces of pavement markers.

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**SECTION 86: SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS  
(Issued 08-15-08)**

**In Section 86-1.01 replace the 2nd paragraph with:**

The locations of signals, beacons, standards, lighting fixtures, signs, controls, services and appurtenances shown on the plans are approximate and the exact locations will be approved by the Engineer in the field.

**In Section 86-1.02 delete the 2nd paragraph.**

**In Section 86-1.06 replace the 10th paragraph with:**

These provisions will not relieve the Contractor in any manner of the Contractor's responsibilities as provided in Section 7-1.12, "Indemnification and Insurance," and Section 7-1.16, "Contractor's Responsibility for the Work and Materials."

**In Section 86-2.02 in the 1st paragraph, replace the 1st sentence with:**

Improvements such as sidewalks, curbs, gutters, portland cement concrete and hot mix asphalt pavement, underlying material, lawns and plants and any other improvements removed, broken or damaged by the Contractor's operations, shall be replaced or reconstructed with the same kind of material as found on the work or with materials of equal quality.

**In Section 86-2.03 replace the 1st paragraph with:**

Except for concrete for cast-in-drilled-hole concrete pile foundations, portland cement concrete shall conform to Section 90-10, "Minor Concrete."

**In Section 86-2.03 replace the 3rd, 4th, and 5th paragraph with:**

Except when located on structures, foundations for posts, standards, and pedestals shall be placed "in the solid" and monolithic.

After each post, standard, and pedestal is in proper position, mortar shall be placed under the base plate as shown on the plans. The exposed portions shall be finished to present a neat appearance. Mortar shall conform to Section 51-1.135, "Mortar," except the mortar shall consist of one part by volume of cementitious material and 3 parts of clean sand.

Reinforced cast-in-drilled-hole concrete pile foundations shall conform to the provisions in Section 49, "Piling," with the following exceptions:

- A. Material resulting from drilling holes shall be disposed of in conformance with the provisions in Section 86-2.01, "Excavating and Backfilling,"



- B. Concrete for cast-in-drilled-hole concrete piles will not be considered as designated by compressive strength.

**In Section 86-2.03 replace the 7th paragraph with:**

Forms shall be true to line and grade. Tops of foundations for posts and standards, except special foundations, shall be finished to curb or sidewalk grade or as directed by the Engineer. Forms shall be rigid and securely braced in place. Conduit ends and anchor bolts shall be placed in proper position and to proper height, and anchor bolts shall be held in place by means of rigid top and bottom templates. The bottom template shall be made of steel. The bottom template shall provide proper spacing and alignment of the anchor bolts near their bottom embedded end. The bottom template shall be installed before placing footing concrete. Anchor bolts shall not be installed more than 1:40 from vertical.

**In Section 86-2.03, delete the 8th paragraph.**

**In Section 86-2.03 replace the 12th paragraph with:**

Plumbing of the standards shall be accomplished by adjusting the leveling nuts before placing the mortar or before the foundation is finished to final grade. Shims or other similar devices shall not be used for plumbing or raking of posts, standards, or pedestals. After final adjustments of both top nuts and leveling nuts on anchorage assemblies have been made, firm contact shall exist between all bearing surfaces of the anchor bolt nuts, washers, and the base plates.

**In Section 86-2.04 replace the 1st and 2nd paragraphs with:**

Bolts, nuts and washers, and anchor bolts for use in signal and lighting support structures shall conform to the provisions in Section 55-2, "Materials." Except when bearing-type connections or slipbases are specified, high-strength bolted connections shall conform to the provisions in Section 55-3.14, "Bolted Connections." Welding, nondestructive testing (NDT) of welds, and acceptance and repair criteria for NDT of steel members shall conform to the requirements of AWS D1.1 and the special provisions.

On each lighting standard except Type 1, one rectangular corrosion resistant metal identification tag shall be permanently attached above the hand hole, near the base of the standard, using stainless steel rivets. On each signal pole support, two corrosion resistant metal identification tags shall be attached, one above the hand hole near the base of the vertical standard and one on the underside of the signal mast arm near the arm plate. As a minimum, the information on each identification tag shall include the name of the manufacturer, the date of manufacture, the identification number as shown on the plans, the contract number, and a unique identification code assigned by the fabricator. This number shall be traceable to a particular contract and the welds on that component, and shall be readable after the support structure is coated and installed. The lettering shall be a minimum of 7 mm high. The information may be either depressed or raised, and shall be legible.

**In Section 86-2.04 replace the 4th paragraph with:**

Ferrous metal parts of standards, with shaft length of 4.6 m and longer, shall conform to the details shown on the plans, the provisions in Section 55-2, "Materials," except as otherwise noted, and the following requirements:

- A. Except as otherwise specified, standards shall be fabricated from sheet steel of weldable grade having a minimum yield strength, after fabrication, of 276 MPa.
- B. Certified test reports which verify conformance to the minimum yield strength requirements shall be submitted to the Engineer. The test reports may be the mill test reports for the as-received steel or, when the as-received steel has a lower yield strength than required, the Contractor shall provide supportive test data which provides assurance that the Contractor's method of cold forming will consistently increase the tensile properties of the steel to meet the specified minimum yield strength. The supportive test data shall include tensile properties of the steel after cold forming for specific heats and thicknesses.
- C. When a single-ply 8-mm thick pole is specified, a 2-ply pole with equivalent section modulus may be substituted.
- D. Standards may be fabricated of full-length sheets or shorter sections. Each section shall be fabricated from not more than 2 pieces of sheet steel. Where 2 pieces are used, the longitudinal welded seams shall be

- directly opposite one another. When the sections are butt-welded together, the longitudinal welded seams on adjacent sections shall be placed to form continuous straight seams from base to top of standard.
- E. Butt-welded circumferential joints of tubular sections requiring CJP groove welds shall be made using a metal sleeve backing ring inside each joint. The sleeve shall be 3-mm nominal thickness, or thicker, and manufactured from steel having the same chemical composition as the steel in the tubular sections to be joined. When the sections to be joined have different specified minimum yield strengths, the steel in the sleeve shall have the same chemical composition as the tubular section having the higher minimum yield strength. The width of the metal sleeve shall be consistent with the type of NDT chosen and shall be a minimum width of 25 mm. The sleeve shall be centered at the joint and be in contact with the tubular section at the point of the weld at time of fit-up.
  - F. Welds shall be continuous.
  - G. The weld metal at the transverse joint shall extend to the sleeve, making the sleeve an integral part of the joint.
  - H. During fabrication, longitudinal seams on vertical tubular members of cantilevered support structures shall be centered on and along the side of the pole that the pole plate is located. Longitudinal seams on horizontal tubular members, including signal and luminaire arms, shall be within +/-45 degrees of the bottom of the arm.
  - I. The longitudinal seam welds in steel tubular sections may be made by the electric resistance welding process.
  - J. Longitudinal seam welds shall have 60 percent minimum penetration, except that within 150 mm of circumferential welds, longitudinal seam welds shall be CJP groove welds. In addition, longitudinal seam welds on lighting support structures having telescopic pole segment splices shall be CJP groove welds on the female end for a length on each end equal to the designated slip fit splice length plus 150 mm.
  - K. Exposed circumferential welds, except fillet and fatigue-resistant welds, shall be ground flush (-0, +2 mm) with the base metal prior to galvanizing or painting.
  - L. Circumferential welds and base plate-to-pole welds may be repaired only one time without written permission from the Engineer.
  - M. Exposed edges of the plates that make up the base assembly shall be finished smooth and exposed corners of the plates shall be broken unless otherwise shown on the plans. Shafts shall be provided with slip-fitter shaft caps.
  - N. Flatness of surfaces of 1) base plates that are to come in contact with concrete, grout, or washers and leveling nuts; 2) plates in high-strength bolted connections; 3) plates in joints where cap screws are used to secure luminaire and signal arms; and 4) plates used for breakaway slip base assemblies shall conform to the requirements in ASTM A6.
  - O. Standards shall be straight, with a permissive variation not to exceed 25 mm measured at the midpoint of a 9-m or 11-m standard and not to exceed 20 mm measured at the midpoint of a 5-m through 6-m standard. Variation shall not exceed 25 mm at a point 4.5 m above the base plate for Type 35 and Type 36 standards.
  - P. Zinc-coated nuts used on fastener assemblies having a specified preload (obtained by specifying a prescribed tension, torque value, or degree of turn) shall be provided with a colored lubricant that is clean and dry to the touch. The color of the lubricant shall be in contrast to the zinc coating on the nut so that the presence of the lubricant is visually obvious. In addition, either the lubricant shall be insoluble in water, or fastener components shall be shipped to the job site in a sealed container.
  - Q. No holes shall be made in structural members unless the holes are shown on the plans or are approved in writing by the Engineer.
  - R. Standards with an outside diameter of 300 mm or less shall be round. Standards with an outside diameter greater than 300 mm shall be round or multisided. Multisided standards shall have a minimum of 12 sides which shall be convex and shall have a minimum bend radius of 100 mm.
  - S. Mast arms for standards shall be fabricated from material as specified for standards, and shall conform to the dimensions shown on the plans.
  - T. The cast steel option for slip bases shall be fabricated from material conforming to the requirements in ASTM Designation: A 27/A 27M, Grade 70-40. Other comparable material may be used if written permission is given by the Engineer. The casting tolerances shall be in conformance with the Steel Founder's Society of America recommendations (green sand molding).
  - U. One casting from each lot of 50 castings or less shall be subject to radiographic inspection, in conformance with the requirements in ASTM Designation: E 94. The castings shall comply with the acceptance criteria severity level 3 or better for the types and categories of discontinuities in conformance with the requirements in ASTM Designations: E 186 and E 446. If the one casting fails to pass the inspection, 2

- additional castings shall be radiographed. Both of these castings shall pass the inspection, or the entire lot of 50 will be rejected.
- V. Material certifications, consisting of physical and chemical properties, and radiographic films of the castings shall be filed at the manufacturer's office. These certifications and films shall be available for inspection upon request.
  - W. High-strength bolts, nuts, and flat washers used to connect slip base plates shall conform to the requirements in ASTM Designation: A 325 or A 325M and shall be galvanized in conformance with the provisions in Section 75-1.05, "Galvanizing."
  - X. Plate washers shall be fabricated by saw cutting and drilling steel plate conforming to the requirements in AISI Designation: 1018, and be galvanized in conformance with the provisions in Section 75-1.05, "Galvanizing." Prior to galvanizing, burrs and sharp edges shall be removed and holes shall be chamfered sufficiently on each side to allow the bolt head to make full contact with the washer without tension on the bolt.
  - Y. High-strength cap screws shown on the plans for attaching arms to standards shall conform to the requirements in ASTM Designation: A 325, A 325M, or A 449, and shall comply with the mechanical requirements in ASTM Designation: A 325 or A 325M after galvanizing. The cap screws shall be galvanized in conformance with the provisions in Section 75-1.05, "Galvanizing." The threads of the cap screws shall be coated with a colored lubricant that is clean and dry to the touch. The color of the lubricant shall be in contrast to the color of the zinc coating on the cap screw so that presence of the lubricant is visually obvious. In addition, either the lubricant shall be insoluble in water, or fastener components shall be shipped to the job site in a sealed container.
  - Z. Unless otherwise specified, bolted connections attaching signal or luminaire arms to poles shall be considered slip critical. Galvanized faying surfaces on plates on luminaire and signal arms and matching plate surfaces on poles shall be roughened by hand using a wire brush prior to assembly and shall conform to the requirements for Class C surface conditions for slip-critical connections in "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts," a specification approved by the Research Council on Structural Connections (RCSC) of the Engineering Foundation. For faying surfaces required to be painted, the paint shall be an approved type, brand, and thickness that has been tested and approved according to the RCSC Specification as a Class B coating.
- AA. Samples of fastener components will be randomly taken from each production lot by the Engineer and submitted, along with test reports required by appropriate ASTM fastener specifications, for QA testing and evaluation. Sample sizes for each fastener component shall be as determined by the Engineer.

**In Section 86-2.04 replace the 7th paragraph with:**

To avoid interference of arm plate-to-tube welds with cap screw heads, and to ensure cap screw heads can be turned using conventional installation tools, fabricators shall make necessary adjustments to details prior to fabrication and properly locate the position of arm tubes on arm plates during fabrication.

**In Section 86-2.05C in the 18th paragraph, replace the 4th and 5th subparagraphs with:**

The conduit shall be placed in the bottom of the trench, and the trench shall be backfilled with minor concrete conforming to the provisions in Section 90-10, "Minor Concrete." Minor concrete shall contain not less than 350 kilograms of cementitious material per cubic meter. Concrete backfill shall be placed to the pavement surface except, when the trench is in hot mix asphalt pavement and additional pavement is not being placed, the top 30 mm of the trench shall be backfilled with hot mix asphalt produced from commercial quality paving asphalt and aggregates.

Prior to spreading hot mix asphalt, tack coat shall be applied in conformance with the provisions in Section 39, "Hot Mix Asphalt." Spreading and compacting of hot mix asphalt shall be performed by any method which will produce a hot mix asphalt surfacing of uniform smoothness, texture and density.

**In Section 86-2.05C in the 23rd paragraph, replace the 3rd subparagraph with:**

Precast concrete conduit cradles shall conform to the dimensions shown on the plans and shall be constructed of minor concrete and commercial quality welded wire fabric. Minor concrete shall conform to the provisions in Section 90-10, "Minor Concrete," and shall contain not less than 350 kilograms of cementitious material per cubic meter. The cradles shall be moist cured for not less than 3 days.

**In Section 86-2.05C in the 23rd paragraph, replace the 7th subparagraph with:**

The space around conduits through bridge abutment walls shall be filled with mortar conforming to the provisions in Section 51-1.135, "Mortar," except that the proportion of cementitious material to sand shall be 1:3.

**In Section 86-2.07 replace the 5th paragraph with:**

Concrete placed around and under traffic pull boxes as shown on the plans shall be minor concrete conforming to the provisions in Section 90-10, "Minor Concrete."

**In Section 86-2.08A in the 1st paragraph in the table, after the heading replace the 4th row with:**

Traffic Signal	Ungrounded Circuit Conductor	Blk	None	CON-1	6
Controller Cabinet	Grounded Circuit Conductor	Wht	None	CON-2	6

**In Section 86-2.08B replace the 2nd paragraph with:**

At any point, the minimum insulation thickness of any Type USE, RHH, or RHW insulation shall be 1.0 mm for conductor sizes No. 14 to No. 10, inclusive; and 1.3 mm for No. 8 to No. 2, inclusive.

At any point, the minimum insulation thickness of any Type THW or TW wires shall be 0.7 mm for conductor sizes No. 14 to No. 10, inclusive; 1.0 mm for No. 8; and 1.4 mm for No. 6 to No. 2, inclusive.

**In Section 86-2.12 replace the 6 and 7th paragraphs with:**

After fabrication, wood poles shall be pressure treated in conformance with the provisions in Section 58, "Preservative Treatment of Lumber, Timber and Piling," and AWPA Use Category System: UC4B, Commodity Specification D.

Wood poles, when specified in the special provisions to be painted, shall be treated with waterborne wood preservatives.

**In Section 86-2.15 replace the 1st paragraph with:**

Galvanizing shall be in conformance with the provisions in Section 75-1.05, "Galvanizing," except that cabinets may be constructed of material galvanized prior to fabrication in conformance with the requirements in ASTM Designation: A 653/653M, Coating Designation G 90, in which case all cut or damaged edges shall be painted with at least 2 applications of approved unthinned zinc-rich primer (organic vehicle type) conforming to the provisions in Section 91, "Paint." Aerosol cans shall not be used. Other types of protective coating must be approved by the Engineer prior to installation.

**In Section 86-2.16, in the 13th paragraph, replace item B with:**

- B. Salt Spray Resistance - The undercutting of the film of the coating system shall not exceed 3 mm average, from lines scored diagonally and deep enough to expose the base metal, after 336 hours exposure in a salt spray cabinet in conformance with the requirements in ASTM Designation: B 117.

**In Section 86-4.01 replace the 1st paragraph with:**

Each vehicle signal face shall be of the adjustable type conforming to the requirements in Institute of Transportation Engineers (ITE) Publication: ST-017B, "Vehicle Traffic Control Signal Heads."

**In Section 86-4.01A in the 1st paragraph, replace the 1st and 3rd subparagraphs with:**

Lenses, reflectors, reflector assemblies, lamp receptacles, lamps, wiring and light distribution shall conform to the requirements in ITE Publication: ST-017B.

All reflectors shall conform to the requirements in ITE Publication: ST-017B except that reflectors shall be made of silvered glass or of specular aluminum with an anodic coating. Reflector ring holder shall be made of cast aluminum.

**In Section 86-4.01B replace the 1st paragraph with:**

Each signal section housing shall be either die-cast or permanent mold-cast aluminum conforming to ITE Publication: ST-017B or, when specified in the special provisions, shall be structural plastic.

**In Section 86-4.01C replace the 1st paragraph with:**

Lamp receptacles and wiring shall conform to ITE Publication: ST-017B. The metal portion of the medium base lamp socket shall be brass, copper or phosphor bronze.

**In Section 86-4.01D replace the 1st paragraph with:**

Each signal section shall be provided with a removable visor conforming to the requirements in ITE Publication: ST-017B. Visors are classified, on the basis of lens enclosure, as full circle, tunnel (bottom open), or cap (bottom and lower sides open). Unless otherwise specified, visors shall be the tunnel type.

**In Section 86-4.02A replace the 1st paragraph with:**

Light emitting diode signal modules shall be designed as retrofit replacements for optical units of standard traffic signal sections and shall not require special tools for installation. Light emitting diode signal modules shall fit into existing traffic signal section housings built in conformance with the requirements in the Institute of Transportation Engineers (ITE) publication ST-017B, "Vehicle Traffic Control Signal Heads (VTCSH)" without modification to the housing.

**In Section 86-4.02A replace the 7th paragraph with:**

Light emitting diode signal modules shall be protected against dust and moisture intrusion in conformance with the requirements in NEMA Standard 250 for Type 4 enclosures to protect the internal components.

**In Section 86-4.02B replace the 1st paragraph with:**

The minimum initial luminous intensity values for light emitting diode signal modules shall conform to the requirements in Section 11.04 of the Institute of Transportation Engineers (ITE) publication ST-017B, "Vehicle Traffic Control Signal Heads (VTCSH)" at 25°C.

**In Section 86-4.02C replace the 3rd paragraph with:**

The light emitting diode signal module on-board circuitry shall include voltage surge protection to withstand high-repetition noise transients as specified in Section 2.1.6 of NEMA Standard TS2.

**In Section 86-4.02D(1), in the 4th paragraph, replace the 7th subparagraph with:**

Moisture resistance testing shall be performed on light emitting diode signal modules in conformance with the requirements in NEMA Standard 250 for Type 4 enclosures. Evidence of internal moisture after testing shall be cause for rejection.

**In Section 86-4.05 replace the 2nd paragraph with:**

Each programmed visibility signal section shall provide a nominal 300-mm diameter circular or arrow indication. Color and arrow configuration shall conform to the requirements in ITE Publication: ST-017B.

**In Section 86-4.06 replace the 1st paragraph with:**

Message symbols for pedestrian signal faces shall be white WALKING PERSON and Portland orange UPRAISED HAND conforming to the requirements in the Institute of Transportation Engineers Standards: "Pedestrian Traffic Control Signal Indications" and "California MUTCD." The height of each symbol shall be not less than 250 mm and the width of each symbol shall be not less than 165 mm.

**In Section 86-4.06(A) in the 1st paragraph, replace the 3rd subparagraph with:**

Each reflector assembly shall consist of a double reflector or 2 single reflectors. Each reflector shall be made of either aluminum or plastic. Reflectors shall conform to the requirements in Institute of Transportation Engineers Publication: ST-017B, "Vehicle Traffic Control Signal Heads." Plastic reflectors shall consist of molded or vacuum-formed plastic with a vacuum-deposited aluminum reflecting surface. The plastic material shall not distort when the reflector is used with the lamp of the wattage normally furnished with the signal. In addition, the UL nonmechanical loading temperature of the material shall exceed, by at least 10°C, the maximum temperature in the signal section with the lamp "ON" and measured in an ambient air temperature of 25°C in conformance with the requirements in UL Publication UL 746B. Each completed reflector shall, when operated with the appropriate lamp and lens, provide the message brightness specified.

**In Section 86-4.07 replace the 10th paragraph with:**

The luminance of the "UPRAISED HAND" symbol shall be 3750 cd/m<sup>2</sup> minimum. The color of "UPRAISED HAND" shall be Portland orange conforming to the requirements of the Institute of Transportation Engineers Standards: "Pedestrian Traffic Control Signal Indications" and "California MUTCD." The height of each symbol shall be not less than 250 mm and the width of each symbol shall be not less than 165 mm.

**In Section 86-4.07C replace the 2nd paragraph with:**

On-board circuitry of the light emitting diode pedestrian signal modules shall include voltage surge protection to withstand high-repetition noise transients as stated in Section 2.1.6 of NEMA Standard TS2.

**In Section 86-4.07D(1) replace the 2nd paragraph with:**

A quantity of 2 units for each design shall be submitted for Design Qualification Testing. Test units shall be submitted to the Transportation Laboratory, after manufacturer's testing is complete.

**In Section 86-4.07D(1) in the 4th paragraph, replace the 5th and 7th subparagraphs with:**

Mechanical vibration testing shall be in conformance with the requirements in Military Specification MIL-STD-883, Test Method 2007, using three 4-minute cycles along each x, y and z axis, at a force of 2.5 Gs, with a frequency sweep from 2 Hz to 120 Hz. The loosening of the lens or of internal components, or other physical damage shall be cause for rejection.

Moisture resistance testing shall be performed on modules mounted in a standard pedestrian signal housing in conformance to the requirements in NEMA Standard 250 for Type 4 enclosures. Evidence of internal moisture after testing shall be cause for rejection.

**In Section 86-5.07A(5) in Section "Elastomeric Sealant" in the 1st paragraph, replace the 2nd sentence with:**

Sealant shall be suitable for use in both hot mix asphalt and portland cement concrete.

**In Section 86-5.07A(5) in Section "Asphatic Emulsion Sealant" in the 1st paragraph, replace the 1st sentence with:**

Asphatic emulsion sealant shall conform to the requirements in State Specification 8040-41A-15 and shall be used only for filling slots in hot mix asphalt pavement.

**In Section 86-5.07A(5) in Section "Hot-Melt Rubberized Asphalt Sealant" in the 1st paragraph, replace the 3rd sentence with:**

Sealant shall be suitable for use in both hot mix asphalt and portland cement concrete.

**In Section 86-5.07A(5) in Section "Hot-Melt Rubberized Asphalt Sealant" in the 2nd paragraph in the table, after the heading replace rows 1 through 3 with:**

Cone Penetration, 25°C, 150 g, 5 s	D 5329, Sec. 6	3.5 mm, max.
Flow, 60°C	D 5329, Sec. 8	5 mm, max.
Resilience, 25°C	D 5329, Sec. 12	25%, min.

**In Section 86-5.07A(5) in Section "Hot-Melt Rubberized Asphalt Sealant", replace the 10th paragraph with:**

If hot mix asphalt surfacing is to be placed, the loop conductors shall be installed prior to placing the uppermost layer of hot mix asphalt. The conductors shall be installed, as shown on the plans, in the compacted layer of hot mix asphalt immediately below the uppermost layer. Installation details shall be as shown on the plans, except the sealant shall fill the slot flush to the surface.

**In Section 86-5.01D replace the 1st paragraph with:**

When a foundation for a pressure-sensitive vehicle detector is to be removed, the hole left by removing the detector frame and foundation shall be filled with minor concrete, except the roadway surface shall be reconstructed with material to match existing surfacing. Minor concrete shall conform to the provisions in Section 90-10, "Minor Concrete," except that the concrete shall contain not less than 250 kilograms of cementitious material per cubic meter for hot mix asphalt surfaced roadways and not less than 350 kilograms of cementitious material per cubic meter for portland cement concrete surfaced roadways.

**In Section 86-6.065 in Section "Mounting Assemblies", replace the 3rd paragraph with:**

At least 4.9 m of clearance shall be provided between the bottom of the fixture and the roadway.

**In Section 86-8.01 replace the 1st paragraph with:**

The contract lump sum price or prices paid for signal, ramp metering, flashing beacon, lighting, sign illumination, traffic monitoring station, highway advisory radio systems, closed circuit television systems, or combinations thereof; for modifying or removing those systems; for temporary systems; or the lump sum or unit prices paid for various units of those systems; or the lump sum or per meter price paid for conduit of the various sizes, types and installation methods listed in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing and installing, modifying, or removing the systems, combinations or units thereof, as shown on the plans, as specified in these specifications and the special provisions, and as directed by the Engineer, including any necessary pull boxes (except when the type required is shown as a separate contract item); excavation and backfill; concrete foundations (except when shown as a separate contract item); pedestrian barricades; furnishing and installing illuminated street name signs; installing sign panels on pedestrian barricades, on flashing beacon standards, and on traffic signal mast arms; restoring sidewalk, pavement and appurtenances damaged or destroyed during construction; salvaging existing materials; and making all required tests.

**In Section 86-8.01, between the 1st and 2nd paragraph add:**

If a portion or all of the poles for signal, lighting and electrical systems pursuant to Standard Specification Section 86, "Signals, Lighting and Electrical Systems," is fabricated more than 480 air line kilometers from both Sacramento and Los Angeles, additional shop inspection expenses will be sustained by the State. Whereas it is and will be impracticable and extremely difficult to ascertain and determine the actual increase in such expenses, it is agreed that payment to the Contractor for furnishing such items from each fabrication site located more than 480 air line kilometers from both Sacramento and Los Angeles will be reduced \$5000; in addition, in the case where a fabrication site is located more than 4800 air line kilometers from both Sacramento and Los Angeles, payment will be reduced an additional \$3000 per each fabrication site (\$8000 total per site).

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**SECTION 88: ENGINEERING FABRIC  
(Issued 01-15-02)**

**Replace Section 88-1.02 with:**

**88-1.02 Pavement Reinforcing Fabric**

Pavement reinforcing fabric shall be 100 percent polypropylene staple fiber fabric material, needle-punched, thermally bonded on one side, and conform to the following:

Specification	Requirement
Weight, grams per square meter ASTM Designation: D 5261	140
Grab tensile strength (25-mm grip), kilonewtons, min. in each direction ASTM Designation: D 4632	0.45
Elongation at break, percent min. ASTM Designation: D 4632	50
Asphalt retention by fabric, grams per square meter. (Residual Minimum) ASTM Designation: D 6140	900

Note: Weight, grab, elongation and asphalt retention are based on Minimum Average Roll Value (MARV)

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**SECTION 90 PORTLAND CEMENT CONCRETE  
(Issued 03-16-07)**

**Replace Section 90 with:**

**SECTION 90 PORTLAND CEMENT CONCRETE  
90-1 GENERAL**

**90-1.01 DESCRIPTION**

Portland cement concrete shall be composed of cementitious material, fine aggregate, coarse aggregate, admixtures if used, and water, proportioned and mixed as specified in these specifications.

The Contractor shall determine the mix proportions for concrete in conformance with these specifications.

Class 1 concrete shall contain not less than 400 kg of cementitious material per cubic meter.

Class 2 concrete shall contain not less than 350 kg of cementitious material per cubic meter.

Class 3 concrete shall contain not less than 300 kg of cementitious material per cubic meter.



Class 4 concrete shall contain not less than 250 kg of cementitious material per cubic meter.

Minor concrete shall contain not less than 325 kg of cementitious material per cubic meter unless otherwise specified in these specifications or the special provisions.

Unless otherwise designated on the plans or specified in these specifications or the special provisions, the amount of cementitious material used per cubic meter of concrete in structures or portions of structures shall conform to the following:

Use	Cementitious Material Content (kg/m <sup>3</sup> )
Concrete designated by compressive strength: Deck slabs and slab spans of bridges Roof sections of exposed top box culverts Other portions of structures	400 min., 475 max. 400 min., 475 max. 350 min., 475 max.
Concrete not designated by compressive strength: Deck slabs and slab spans of bridges Roof sections of exposed top box culverts Prestressed members Seal courses Other portions of structures	400 min. 400 min. 400 min. 400 min. 350 min.
Concrete for precast members	350 min., 550 max.

Whenever the 28-day compressive strength shown on the plans is greater than 25 MPa, the concrete shall be designated by compressive strength. If the plans show a 28-day compressive strength that is 28 MPa or greater, an additional 14 days will be allowed to obtain the specified strength. The 28-day compressive strengths shown on the plans that are 25 MPa or less are shown for design information only and are not a requirement for acceptance of the concrete.

Concrete designated by compressive strength shall be proportioned such that the concrete will attain the strength shown on the plans or specified in the special provisions.

Before using concrete for which the mix proportions have been determined by the Contractor, or in advance of revising those mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design.

Compliance with cementitious material content requirements will be verified in conformance with procedures described in California Test 518 for cement content. For testing purposes, supplementary cementitious material shall be considered to be cement. Batch proportions shall be adjusted as necessary to produce concrete having the specified cementitious material content.

If any concrete has a cementitious material, portland cement, or supplementary cementitious material content that is less than the minimum required, the concrete shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place and the Contractor shall pay to the State \$0.55 for each kilogram of cementitious material, portland cement, or supplementary cementitious material that is less than the minimum required. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract. The deductions will not be made unless the difference between the contents required and those actually provided exceeds the batching tolerances permitted by Section 90-5, "Proportioning." No deductions will be made based on the results of California Test 518.

The requirements of the preceding paragraph shall not apply to minor concrete or commercial quality concrete.

## 90-2 MATERIALS

### 90-2.01 CEMENTITIOUS MATERIALS

Unless otherwise specified, cementitious material shall be either a combination of Type II or Type V portland cement and a supplementary cementitious material, or a blended cement.

Cementitious materials used in cast-in-place concrete for exposed surfaces of like elements of a structure shall be from the same sources and of the same proportions.

Cementitious materials shall be protected from moisture until used. Sacked cementitious materials shall be piled to permit access for tallying, inspecting, and identifying each shipment.

Facilities shall be provided to ensure that cementitious materials meeting this Section 90-2.01 are kept separate from other cementitious materials. Sampling cementitious materials shall be in conformance with California Test 125.

The Contractor shall furnish a Certificate of Compliance for cementitious materials in conformance with the provisions in Section 6-1.07, "Certificates of Compliance." The Certificate of Compliance shall indicate the source by name and location (including country, state, and city). If cementitious material is delivered directly to the job site, the Certificate of Compliance shall be signed by the cementitious material supplier. If the cementitious material is used in ready-mixed concrete or in precast concrete products purchased as such by the Contractor, the Certificate of Compliance shall be signed by the manufacturer of the concrete or product.

#### **90-2.01A CEMENT**

Portland cement shall conform to the requirements in ASTM Designation: C 150 except, using a 10-sample moving average, limestone shall not exceed 2.5 percent. The  $C_3S$  content of Type II cement shall not exceed 65 percent.

Blended cement shall conform to the requirements for Portland Blast-Furnace Slag, Cement Type IS (MS) or Portland-Pozzolan Cement, Type IP (MS) in AASHTO Designation: M 240 and shall be comprised of an intimate and uniform blend of Type II or Type V cement and supplementary cementitious material in an amount conforming to the requirements in Section 90-2.01C, "Required Use of Supplementary Cementitious Materials."

In addition, blended cement, Type II portland cement, and Type V portland cement shall conform to the following requirements:

- A. The cement shall not contain more than 0.60-percent by mass of alkalis, calculated as the percentage of  $Na_2O$  plus 0.658 times the percentage of  $K_2O$ , when determined by methods as required in AASHTO Designation: T 105;
- B. The autoclave expansion shall not exceed 0.50-percent; and
- C. Mortar, containing the cement to be used and Ottawa sand, when tested in conformance with California Test 527, shall not expand in water more than 0.010-percent and shall not contract in air more than 0.048-percent, except that when cement is to be used for precast prestressed concrete piling, precast prestressed concrete members, or steam cured concrete products, the mortar shall not contract in air more than 0.053-percent.

Type III portland cement shall be used only as specified in the special provisions or with the approval of the Engineer. Type III portland cement shall conform to the additional requirements listed above for Type II portland cement, except when tested in conformance with California Test 527, mortar containing Type III portland cement shall not contract in air more than 0.075-percent.

#### **90-2.01B SUPPLEMENTARY CEMENTITIOUS MATERIALS (SCM)**

Fly ash shall conform to the requirements in AASHTO Designation: M 295, Class F, and the following:

- A. Calcium oxide content shall not exceed 10 percent.
- B. The available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when determined in conformance with the requirements in ASTM Designation: C 311 or the total alkali, as sodium oxide equivalent, shall not exceed 5.0 percent when determined in conformance with the requirements in AASHTO Designation: T 105.
- C. Commingling of fly ash from different sources at uncontrolled ratios is permissible only if the following criteria are satisfied:
  1. Sources of fly ash to be commingled shall be on the approved list of materials for use in concrete.
  2. Testing of the commingled product is the responsibility of the fly ash supplier.
  3. Each fly ash's running average of density shall not differ from any other by more than  $0.25g/cm^3$  at the time of commingling.
  4. Each fly ash's running average of loss on ignition shall not differ from any other by more than one percent at the time of commingling.
  5. The final product of commingled fly ash shall conform to the requirement in AASHTO Designation: M 295.

Raw or calcined natural pozzolans shall conform to the requirements in AASHTO Designation: M 295, Class N and the following requirements:

- A. Calcium oxide content shall not exceed 10 percent.
- B. The available alkali, as sodium oxide equivalent, shall not exceed 1.5 percent when determined in conformance with the requirements in ASTM Designation: C 311 or the total alkali, as sodium oxide equivalent, shall not exceed 5.0 percent when determined in conformance with the requirements in AASHTO Designation: T 105.

Ground Granulated Blast Furnace Slag (GGBFS) shall conform to the requirements in AASHTO Designation: M 302, Grade 100 or Grade 120.

Silica Fume shall conform to the requirements of AASHTO Designation: M 307 with reduction in mortar expansion of 80 percent, minimum, using the cement from the proposed mix design.

#### **90-2.01C REQUIRED USE OF SUPPLEMENTARY CEMENTITIOUS MATERIALS**

The amount of portland cement and SCM used in portland cement concrete shall conform to the minimum cementitious material content provisions in Section 90-1.01, "Description," or Section 90-4.05, "Optional Use of Chemical Admixtures," and the following:

- A. If a blended cement conforming to the provisions in Section 90-2.01A, "Cement," is used, the minimum amount of SCM incorporated into the cement shall conform to the provisions in this Section 90-2.01C.
- B. Fly ash or natural pozzolan, silica fume, or GGBFS shall not be used with Type IP or Type IS cements.

Use of SCMs shall conform to the following:

- A. If fly ash or natural pozzolan is used:
  - 1. The minimum amount of portland cement shall not be less than 75 percent by mass of the specified minimum cementitious material content.
  - 2. The minimum amount of fly ash or natural pozzolan shall be:
    - a. Fifteen percent by mass of the total amount of cementitious material if the calcium oxide content of fly ash or natural pozzolan is equal to or less than 2 percent by mass;
    - b. Twenty-five percent by mass of the total amount of cementitious material if the calcium oxide content of fly ash or natural pozzolan is greater than 2 percent by mass.
- B. The total amount of fly ash or natural pozzolan shall not exceed 35 percent by mass of the total amount of cementitious material to be used in the mix. If Section 90-1.01, "Description," specifies a maximum cementitious material content in kilograms per cubic meter, the total mass of portland cement and fly ash or natural pozzolan per cubic meter shall not exceed the specified maximum cementitious material content.
- C. If silica fume is used:
  - 1. The amount of silica fume shall not be less than 10 percent by mass of the total amount of cementitious material.
  - 2. The amount of portland cement shall not be less than 75 percent by mass of the specified minimum cementitious material content.
  - 3. If Section 90-1.01, "Description," specifies a maximum cementitious material content in kilograms per cubic meter, the total mass of portland cement and silica fume per cubic meter shall not exceed the specified maximum cementitious material content.
- D. If GGBFS is used:
  - 1. The minimum amount of GGBFS shall be either:
    - a. Forty percent of the total cementitious material to be used, if the aggregates used in the concrete are on the Department's list of "Approved Aggregates For Use in Concrete with Reduced Fly Ash."
    - b. No less than 50 percent.
  - 2. The amount of GGBFS shall not exceed 60 percent by mass of the total amount of cementitious materials to be used.

**90-2.02 AGGREGATES**

Aggregates shall be free from deleterious coatings, clay balls, roots, bark, sticks, rags, and other extraneous material.

The Contractor shall provide safe and suitable facilities, including necessary splitting devices for obtaining samples of aggregates, in conformance with California Test 125.

Aggregates shall be of such character that it will be possible to produce workable concrete within the limits of water content provided in Section 90-6.06, "Amount of Water and Penetration."

Aggregates shall have not more than 10 percent loss when tested for soundness in conformance with the requirements in California Test 214. The soundness requirement for fine aggregate will be waived, provided that the durability index,  $D_f$ , of the fine aggregate is 60 or greater when tested for durability in conformance with California Test 229.

If the results of any one or more of the Cleanness Value, Sand Equivalent, or aggregate grading tests do not meet the requirements specified for "Operating Range" but all meet the "Contract Compliance" requirements, the placement of concrete shall be suspended at the completion of the current pour until tests or other information indicate that the next material to be used in the work will comply with the requirements specified for "Operating Range."

If the results of either or both the Cleanness Value and coarse aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete that is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place, and the Contractor shall pay to the State \$4.60 per cubic meter for paving concrete and \$7.20 per cubic meter for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.

If the results of either or both the Sand Equivalent and fine aggregate grading tests do not meet the requirements specified for "Contract Compliance," the concrete that is represented by the tests shall be removed. However, if the Engineer determines that the concrete is structurally adequate, the concrete may remain in place and the Contractor shall pay to the State \$4.60 per cubic meter for paving concrete and \$7.20 per cubic meter for all other concrete for the concrete represented by these tests and left in place. The Department may deduct the amount from any moneys due, or that may become due, the Contractor under the contract.

The 2 preceding paragraphs apply individually to the "Contract Compliance" requirements for coarse aggregate and fine aggregate. When both coarse aggregate and fine aggregate do not conform to the "Contract Compliance" requirements, both paragraphs shall apply. The payments specified in those paragraphs are in addition to any payments made in conformance with the provisions in Section 90-1.01, "Description."

No single Cleanness Value, Sand Equivalent, or aggregate grading test shall represent more than 250 m<sup>3</sup> of concrete or one day's pour, whichever is smaller.

When the source of an aggregate is changed, the Contractor shall adjust the mix proportions and submit in writing to the Engineer a copy of the mix design before using the aggregates.

**90-2.02A COARSE AGGREGATE**

Coarse aggregate shall consist of gravel, crushed gravel, crushed rock, reclaimed aggregate, crushed air-cooled iron blast furnace slag or combinations thereof. Crushed air-cooled blast furnace slag shall not be used in reinforced or prestressed concrete.

Reclaimed aggregate is aggregate that has been recovered from plastic concrete by washing away the cementitious material. Reclaimed aggregate shall conform to all aggregate requirements.

Coarse aggregate shall conform to the following quality requirements:

Tests	California Test	Requirements
Loss in Los Angeles Rattler (after 500 revolutions)	211	45% max.
Cleanness Value		
Operating Range	227	75 min.
Contract Compliance	227	71 min.

In lieu of the above Cleanness Value requirements, a Cleanness Value "Operating Range" limit of 71, minimum, and a Cleanness Value "Contract Compliance" limit of 68, minimum, will be used to determine the

acceptability of the coarse aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

- A. Coarse aggregate sampled at the completion of processing at the aggregate production plant had a Cleanness Value of not less than 82 when tested in conformance with the requirements in California Test 227; and
- B. Prequalification tests performed in conformance with the requirements in California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

**90-2.02B FINE AGGREGATE**

Fine aggregate shall consist of natural sand, manufactured sand produced from larger aggregate or a combination thereof. Manufactured sand shall be well graded.

Fine aggregate shall conform to the following quality requirements:

Test	California Test	Requirements
Organic Impurities	213	Satisfactory <sup>a</sup>
Mortar Strengths Relative to Ottawa Sand	515	95%, min.
Sand Equivalent:		
Operating Range	217	75, min.
Contract Compliance	217	71, min.

- a Fine aggregate developing a color darker than the reference standard color solution may be accepted if it is determined by the Engineer, from mortar strength tests, that a darker color is acceptable.

In lieu of the above Sand Equivalent requirements, a Sand Equivalent "Operating Range" limit of 71, minimum, and a Sand Equivalent "Contract Compliance" limit of 68, minimum, will be used to determine the acceptability of the fine aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Section 6-1.07, "Certificates of Compliance," certifying that:

- A. Fine aggregate sampled at the completion of processing at the aggregate production plant had a Sand Equivalent value of not less than 82 when tested by California Test 217; and
- B. Prequalification tests performed in conformance with California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

**90-2.03 WATER**

In conventionally reinforced concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 1000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, nor more than 1300 parts per million of sulfates as SO<sub>4</sub>, when tested in conformance with California Test 417. In prestressed concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 650 parts per million of chlorides as Cl, when tested in conformance with California Test 422, nor more than 1300 parts per million of sulfates as SO<sub>4</sub>, when tested in conformance with California Test 417. In no case shall the water contain an amount of impurities that will cause either: 1) a change in the setting time of cement of more than 25 percent when tested in conformance with the requirements in ASTM Designation: C 191 or ASTM Designation: C 266 or 2) a reduction in the compressive strength of mortar at 14 days of more than 5 percent, when tested in conformance with the requirements in ASTM Designation: C 109, when compared to the results obtained with distilled water or deionized water, tested in conformance with the requirements in ASTM Designation: C 109.

In nonreinforced concrete work, the water for curing, for washing aggregates and for mixing shall be free from oil and shall not contain more than 2000 parts per million of chlorides as Cl, when tested in conformance with California Test 422, or more than 1500 parts per million of sulfates as SO<sub>4</sub>, when tested in conformance with California Test 417.

In addition to the above provisions, water for curing concrete shall not contain impurities in a sufficient amount to cause discoloration of the concrete or produce etching of the surface.

Water reclaimed from mixer wash-out operations may be used in mixing concrete. The water shall not contain coloring agents or more than 300 parts per million of alkalis ( $\text{Na}_2\text{O} + 0.658 \text{K}_2\text{O}$ ) as determined on the filtrate. The specific gravity of the water shall not exceed 1.03 and shall not vary more than  $\pm 0.010$  during a day's operations.

**90-2.04 ADMIXTURE MATERIALS**

Admixture materials shall conform to the requirements in the following ASTM Designations:

- A. Chemical Admixtures—ASTM Designation: C 494.
- B. Air-entraining Admixtures—ASTM Designation: C 260.

**90-3 AGGREGATE GRADINGS**

**90-3.01 GENERAL**

Before beginning concrete work, the Contractor shall submit in writing to the Engineer the gradation of the primary aggregate nominal sizes that the Contractor proposes to furnish. If a primary coarse aggregate or the fine aggregate is separated into 2 or more sizes, the proposed gradation shall consist of the gradation for each individual size, and the proposed proportions of each individual size, combined mathematically to indicate one proposed gradation. The proposed gradation shall meet the grading requirements shown in the table in this section, and shall show the percentage passing each of the sieve sizes used in determining the end result.

The Engineer may waive, in writing, the gradation requirements in this Section 90-3.01 and in Sections 90-3.02, "Coarse Aggregate Grading," 90-3.03, "Fine Aggregate Grading," and 90-3.04, "Combined Aggregate Gradings," if, in the Engineer's opinion, furnishing the gradation is not necessary for the type or amount of concrete work to be constructed.

Gradations proposed by the Contractor shall be within the following percentage passing limits:

Primary Aggregate Nominal Size	Sieve Size	Limits of Proposed Gradation
37.5-mm x 19-mm	25-mm	19 - 41
25-mm x 4.75-mm	19-mm	52 - 85
25-mm x 4.75-mm	9.5-mm	15 - 38
12.5-mm x 4.75-mm	9.5-mm	40 - 78
9.5-mm x 2.36-mm	9.5-mm	50 - 85
Fine Aggregate	1.18-mm	55 - 75
Fine Aggregate	600- $\mu\text{m}$	34 - 46
Fine Aggregate	300- $\mu\text{m}$	16 - 29

Should the Contractor change the source of supply, the Contractor shall submit in writing to the Engineer the new gradations before their intended use.

**90-3.02 COARSE AGGREGATE GRADING**

The grading requirements for coarse aggregates are shown in the following table for each size of coarse aggregate:

Sieve Sizes	Percentage Passing Primary Aggregate Nominal Sizes							
	37.5-mm x 19-mm		25-mm x 4.75-mm		12.5-mm x 4.75-mm		9.5-mm x 2.36-mm	
	Operating Range	Contract Compliance	Operating Range	Contract Compliance	Operating Range	Contract Compliance	Operating Range	Contract Compliance
50-mm	100	100	—	—	—	—	—	—
37.5-mm	88 - 100	85 - 100	100	100	—	—	—	—
25-mm	X ±18	X ±25	88 - 100	86 - 100	—	—	—	—
19-mm	0 - 17	0 - 20	X ±15	X ±22	100	100	—	—
12.5-mm	—	—	—	—	82 - 100	80 - 100	100	100
9.5-mm	0 - 7	0 - 9	X ±15	X ±22	X ±15	X ±22	X ±15	X ±20
4.75-mm	—	—	0 - 16	0 - 18	0 - 15	0 - 18	0 - 25	0 - 28
2.36-mm	—	—	0 - 6	0 - 7	0 - 6	0 - 7	0 - 6	0 - 7

In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

Coarse aggregate for the 37.5-mm, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," shall be furnished in 2 or more primary aggregate nominal sizes. Each primary aggregate nominal size may be separated into 2 sizes and stored separately, provided that the combined material conforms to the grading requirements for that particular primary aggregate nominal size.

When the 25-mm, maximum, combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," is to be used, the coarse aggregate may be separated into 2 sizes and stored separately, provided that the combined material shall conform to the grading requirements for the 25-mm x 4.75-mm primary aggregate nominal size.

### 90-3.03 FINE AGGREGATE GRADING

Fine aggregate shall be graded within the following limits:

Sieve Sizes	Percentage Passing	
	Operating Range	Contract Compliance
9.5-mm	100	100
4.75-mm	95 - 100	93 - 100
2.36-mm	65 - 95	61 - 99
1.18-mm	X ±10	X ±13
600-µm	X ±9	X ±12
300-µm	X ±6	X ±9
150-µm	2 - 12	1 - 15
75-µm	0 - 8	0 - 10

In the above table, the symbol X is the gradation that the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

In addition to the above required grading analysis, the distribution of the fine aggregate sizes shall be such that the difference between the total percentage passing the 1.18-mm sieve and the total percentage passing the 600-µm sieve shall be between 10 and 40, and the difference between the percentage passing the 600-µm and 300-µm sieves shall be between 10 and 40.

Fine aggregate may be separated into 2 or more sizes and stored separately, provided that the combined material conforms to the grading requirements specified in this Section 90-3.03.

### 90-3.04 COMBINED AGGREGATE GRADINGS

Combined aggregate grading limits shall be used only for the design of concrete mixes. Concrete mixes shall be designed so that aggregates are combined in proportions that shall produce a mixture within the grading limits for combined aggregates as specified herein.

The combined aggregate grading, except when otherwise specified in these specifications or the special provisions, shall be either the 37.5-mm, maximum grading, or the 25-mm, maximum grading, at the option of the Contractor.

**Grading Limits of Combined Aggregates**

Sieve Sizes	Percentage Passing			
	37.5-mm Max.	25-mm Max.	12.5-mm Max.	9.5-mm Max.
50-mm	100	—	—	—
37.5-mm	90 - 100	100	—	—
25-mm	50 - 86	90 - 100	—	—
19-mm	45 - 75	55 - 100	100	—
12.5-mm	—	—	90-100	100
9.5-mm	38 - 55	45 - 75	55 - 86	50 - 100
4.75-mm	30 - 45	35 - 60	45 - 63	45 - 63
2.36-mm	23 - 38	27 - 45	35 - 49	35 - 49
1.18-mm	17 - 33	20 - 35	25 - 37	25 - 37
600-µm	10 - 22	12 - 25	15 - 25	15 - 25
300-µm	4 - 10	5 - 15	5 - 15	5 - 15
150-µm	1 - 6	1 - 8	1 - 8	1 - 8
75-µm	0 - 3	0 - 4	0 - 4	0 - 4

Changes from one grading to another shall not be made during the progress of the work unless permitted by the Engineer.

**90-4 ADMIXTURES**

**90-4.01 GENERAL**

Admixtures used in portland cement concrete shall conform to and be used in conformance with the provisions in this Section 90-4 and the special provisions. Admixtures shall be used when specified or ordered by the Engineer and may be used at the Contractor's option as provided herein.

Chemical admixtures and air-entraining admixtures containing chlorides as Cl in excess of one percent by mass of admixture, as determined by California Test 415, shall not be used.

Admixtures shall be uniform in properties throughout their use in the work. Should it be found that an admixture as furnished is not uniform in properties, its use shall be discontinued.

If more than one admixture is used, the admixtures shall be compatible with each other so that the desirable effects of all admixtures used will be realized.

Chemical admixtures shall be used in conformance with the manufacturer's written recommendations.

**90-4.02 MATERIALS**

Admixture materials shall conform to the provisions in Section 90-2.04, "Admixture Materials."

**90-4.03 ADMIXTURE APPROVAL**

No admixture brand shall be used in the work unless it is on the Department's current list of approved brands for the type of admixture involved.

Admixture brands will be considered for addition to the approved list if the manufacturer of the admixture submits to the Transportation Laboratory a sample of the admixture accompanied by certified test results demonstrating that the admixture complies with the requirements in the appropriate ASTM Designation and these specifications. The sample shall be sufficient to permit performance of all required tests. Approval of admixture brands will be dependent upon a determination as to compliance with the requirements, based on the certified test results submitted, together with tests the Department may elect to perform.

If the Contractor proposes to use an admixture of a brand and type on the current list of approved admixture brands, the Contractor shall furnish a Certificate of Compliance from the manufacturer, as provided in Section 6-1.07, "Certificates of Compliance," certifying that the admixture furnished is the same as that previously approved. If a previously approved admixture is not accompanied by a Certificate of Compliance, the admixture shall not be used in the work until the Engineer has had sufficient time to make the appropriate tests and has approved the admixture for use. The Engineer may take samples for testing at any time, whether or not the admixture has been accompanied by a Certificate of Compliance.



#### **90-4.04 REQUIRED USE OF CHEMICAL ADMIXTURES**

If the use of a chemical admixture is specified, the admixture shall be used at the dosage specified, except that if no dosage is specified, the admixture shall be used at the dosage normally recommended by the manufacturer of the admixture.

#### **90-4.05 OPTIONAL USE OF CHEMICAL ADMIXTURES**

The Contractor may use Type A or F, water-reducing; Type B, retarding; or Type D or G, water-reducing and retarding admixtures as described in ASTM Designation: C 494 to conserve cementitious material or to facilitate any concrete construction application subject to the following conditions:

- A. If a water-reducing admixture or a water-reducing and retarding admixture is used, the cementitious material content specified or ordered may be reduced by a maximum of 5 percent by mass, except that the resultant cementitious material content shall be not less than 300 kilograms per cubic meter; and
- B. When a reduction in cementitious material content is made, the dosage of admixture used shall be the dosage used in determining approval of the admixture.

Unless otherwise specified, a Type C accelerating chemical admixture conforming to the requirements in ASTM Designation: C 494, may be used in portland cement concrete. Inclusion in the mix design submitted for approval will not be required provided that the admixture is added to counteract changing conditions that contribute to delayed setting of the portland cement concrete, and the use or change in dosage of the admixture is approved in writing by the Engineer.

#### **90-4.06 REQUIRED USE OF AIR-ENTRAINING ADMIXTURES**

When air-entrainment is specified or ordered by the Engineer, the air-entraining admixture shall be used in amounts to produce a concrete having the specified air content as determined by California Test 504.

#### **90-4.07 OPTIONAL USE OF AIR-ENTRAINING ADMIXTURES**

When air-entrainment has not been specified or ordered by the Engineer, the Contractor will be permitted to use an air-entraining admixture to facilitate the use of any construction procedure or equipment provided that the average air content, as determined by California Test 504, of 3 successive tests does not exceed 4 percent, and no single test value exceeds 5.5 percent. If the Contractor elects to use an air-entraining admixture in concrete for pavement, the Contractor shall so indicate at the time the Contractor designates the source of aggregate.

#### **90-4.08 BLANK**

#### **90-4.09 BLANK**

#### **90-4.10 PROPORTIONING AND DISPENSING LIQUID ADMIXTURES**

Chemical admixtures and air-entraining admixtures shall be dispensed in liquid form. Dispensers for liquid admixtures shall have sufficient capacity to measure at one time the prescribed quantity required for each batch of concrete. Each dispenser shall include a graduated measuring unit into which liquid admixtures are measured to within  $\pm 5$  percent of the prescribed quantity for each batch. Dispensers shall be located and maintained so that the graduations can be accurately read from the point at which proportioning operations are controlled to permit a visual check of batching accuracy prior to discharge. Each measuring unit shall be clearly marked for the type and quantity of admixture.

Each liquid admixture dispensing system shall be equipped with a sampling device consisting of a valve located in a safe and readily accessible position such that a sample of the admixture may be withdrawn slowly by the Engineer.

If more than one liquid admixture is used in the concrete mix, each liquid admixture shall have a separate measuring unit and shall be dispensed by injecting equipment located in such a manner that the admixtures are not mixed at high concentrations and do not interfere with the effectiveness of each other. When air-entraining admixtures are used in conjunction with other liquid admixtures, the air-entraining admixture shall be the first to be incorporated into the mix, unless it is demonstrated that a different sequence improves performance.

When automatic proportioning devices are required for concrete pavement, dispensers for liquid admixtures shall operate automatically with the batching control equipment. The dispensers shall be equipped with an

automatic warning system in good operating condition that will provide a visible or audible signal at the point at which proportioning operations are controlled when the quantity of admixture measured for each batch of concrete varies from the preselected dosage by more than 5 percent, or when the entire contents of the measuring unit are not emptied from the dispenser into each batch of concrete.

Unless liquid admixtures are added to premeasured water for the batch, their discharge into the batch shall be arranged to flow into the stream of water so that the admixtures are well dispersed throughout the batch, except that air-entraining admixtures may be dispensed directly into moist sand in the batching bins provided that adequate control of the air content of the concrete can be maintained.

Liquid admixtures requiring dosages greater than 2.5 L/m<sup>3</sup> shall be considered to be water when determining the total amount of free water as specified in Section 90-6.06, "Amount of Water and Penetration."

#### **90-4.11 BLANK**

### **90-5 PROPORTIONING**

#### **90-5.01 STORAGE OF AGGREGATES**

Aggregates shall be stored or stockpiled in such a manner that separation of coarse and fine particles of each size shall be avoided and the various sizes shall not become intermixed before proportioning.

Aggregates shall be stored or stockpiled and handled in a manner that prevent contamination by foreign materials. In addition, storage of aggregates at batching or mixing facilities that are erected subsequent to the award of the contract and that furnish concrete to the project shall conform to the following:

- A. Intermingling of the different sizes of aggregates shall be positively prevented. The Contractor shall take the necessary measures to prevent intermingling. The preventive measures may include, but are not necessarily limited to, physical separation of stockpiles or construction of bulkheads of adequate length and height; and
- B. Contamination of aggregates by contact with the ground shall be positively prevented. The Contractor shall take the necessary measures to prevent contamination. The preventive measures shall include, but are not necessarily limited to, placing aggregates on wooden platforms or on hardened surfaces consisting of portland cement concrete, asphalt concrete, or cement treated material.

In placing aggregates in storage or in moving the aggregates from storage to the weigh hopper of the batching plant, any method that may cause segregation, degradation, or the combining of materials of different gradings that will result in any size of aggregate at the weigh hopper failing to meet the grading requirements shall be discontinued. Any method of handling aggregates that results in excessive breakage of particles shall be discontinued. The use of suitable devices to reduce impact of falling aggregates may be required by the Engineer.

#### **90-5.02 PROPORTIONING DEVICES**

Weighing, measuring, or metering devices used for proportioning materials shall conform to the requirements in Section 9-1.01, "Measurement of Quantities," and this Section 90-5.02. In addition, automatic weighing systems shall comply with the requirements for automatic proportioning devices in Section 90-5.03A, "Proportioning for Pavement." Automatic devices shall be automatic to the extent that the only manual operation required for proportioning the aggregates, cement, and supplementary cementitious material for one batch of concrete is a single operation of a switch or starter.

Proportioning devices shall be tested as frequently as the Engineer may deem necessary to ensure their accuracy.

Weighing equipment shall be insulated against vibration or movement of other operating equipment in the plant. When the plant is in operation, the mass of each batch of material shall not vary from the mass designated by the Engineer by more than the tolerances specified herein.

Equipment for cumulative weighing of aggregate shall have a zero tolerance of  $\pm 0.5$  percent of the designated total batch mass of the aggregate. For systems with individual weigh hoppers for the various sizes of aggregate, the zero tolerance shall be  $\pm 0.5$  percent of the individual batch mass designated for each size of aggregate. Equipment for cumulative weighing of cement and supplementary cementitious material shall have a zero tolerance of  $\pm 0.5$  percent of the designated total batch mass of the cement and supplementary cementitious material. Equipment for weighing cement or supplementary cementitious material separately shall have a zero tolerance of  $\pm 0.5$  percent of their designated individual batch masses. Equipment for measuring water shall have a zero tolerance of  $\pm 0.5$  percent of its designated mass or volume.

The mass indicated for any batch of material shall not vary from the preselected scale setting by more than the following:

- A. Aggregate weighed cumulatively shall be within 1.0 percent of the designated total batch mass of the aggregate. Aggregates weighed individually shall be within 1.5 percent of their respective designated batch masses; and
- B. Cement shall be 99 to 102 percent of its designated batch mass. When weighed individually, supplementary cementitious material shall be 99 to 102 percent of its designated batch mass. When supplementary cementitious material and cement are permitted to be weighed cumulatively, cement shall be weighed first to 99 to 102 percent of its designated batch mass, and the total for cement and supplementary cementitious material shall be 99 to 102 percent of the sum of their designated batch masses; and
- C. Water shall be within 1.5 percent of its designated mass or volume.

Each scale graduation shall be approximately 0.001 of the total capacity of the scale. The capacity of scales for weighing cement, supplementary cementitious material, or cement plus supplementary cementitious material and aggregates shall not exceed that of commercially available scales having single graduations indicating a mass not exceeding the maximum permissible mass variation above, except that no scale shall be required having a capacity of less than 500 kg, with 0.5-kg graduations.

### **90-5.03 PROPORTIONING**

Proportioning shall consist of dividing the aggregates into the specified sizes, each stored in a separate bin, and combining them with cementitious material and water as provided in these specifications. Aggregates shall be proportioned by mass.

At the time of batching, aggregates shall have been dried or drained sufficiently to result in a stable moisture content such that no visible separation of water from aggregate will take place during transportation from the proportioning plant to the point of mixing. In no event shall the free moisture content of the fine aggregate at the time of batching exceed 8 percent of its saturated, surface-dry mass.

Should separate supplies of aggregate material of the same size group, but of different moisture content or specific gravity or surface characteristics affecting workability, be available at the proportioning plant, withdrawals shall be made from one supply exclusively and the materials therein completely exhausted before starting upon another.

Bulk Type IP (MS) cement shall be weighed in an individual hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer.

Bulk cement and supplementary cementitious material may be weighed in separate, individual weigh hoppers or may be weighed in the same weigh hopper and shall be kept separate from the aggregates until the ingredients are released for discharge into the mixer. If the cement and supplementary cementitious material are weighed cumulatively, the cement shall be weighed first.

If cement and supplementary cementitious material are weighed in separate weigh hoppers, the weigh systems for the proportioning of the aggregate, the cement, and the supplementary cementitious material shall be individual and distinct from all other weigh systems. Each weigh system shall be equipped with a hopper, a lever system, and an indicator to constitute an individual and independent material weighing device. The cement and the supplementary cementitious material shall be discharged into the mixer simultaneously with the aggregate.

The scales and weigh hoppers for bulk weighing cement, supplementary cementitious material, or cement plus supplementary cementitious material shall be separate and distinct from the aggregate weighing equipment.

For batches of one cubic meter or more, the batching equipment shall conform to one of the following combinations:

- A. Separate boxes and separate scale and indicator for weighing each size of aggregate.
- B. Single box and scale indicator for all aggregates.
- C. Single box or separate boxes and automatic weighing mechanism for all aggregates.

In order to check the accuracy of batch masses, the gross mass and tare mass of batch trucks, truck mixers, truck agitators, and non-agitating hauling equipment shall be determined when ordered by the Engineer. The equipment shall be weighed on scales designated by the Engineer.

### **90-5.03A PROPORTIONING FOR PAVEMENT**

Aggregates and bulk supplementary cementitious material for use in pavement shall be proportioned by mass by means of automatic proportioning devices of approved type conforming to these specifications.

The Contractor shall install and maintain in operating condition an electronically actuated moisture meter that will indicate, on a readily visible scale, changes in the moisture content of the fine aggregate as it is batched within a sensitivity of 0.5 percent by mass of the fine aggregate.

The batching of cement, supplementary cementitious material, or cement plus supplementary cementitious material and aggregate shall be interlocked so that a new batch cannot be started until all weigh hoppers are empty, the proportioning devices are within zero tolerance, and the discharge gates are closed. The interlock shall permit no part of the batch to be discharged until all aggregate hoppers and the cement and supplementary cementitious material hoppers or the cement plus supplementary cementitious material hopper are charged with masses that are within the tolerances specified in Section 90-5.02, "Proportioning Devices."

If interlocks are required for cement and supplementary cementitious material charging mechanisms and cement and supplementary cementitious material are weighed cumulatively, their charging mechanisms shall be interlocked to prevent the introduction of mineral admixture until the mass of cement in the cement weigh hopper is within the tolerances specified in Section 90-5.02, "Proportioning Devices."

If concrete is completely mixed in stationary paving mixers, the supplementary cementitious materials shall be weighed in a separate weigh hopper and the supplementary cementitious material and cement shall be introduced simultaneously into the mixer proportionately with the aggregate. If the Contractor provides certification that the stationary mixer is capable of mixing the cement, supplementary cementitious material, aggregates, and water uniformly before discharge, weighing the supplementary cementitious material cumulatively with the cement is permitted. Certification shall contain the following:

- A. Test results for 2 compressive strength test cylinders of concrete taken within the first one-third and 2 compressive strength test cylinders of concrete taken within the last one-third of the concrete discharged from a single batch from the stationary paving mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength";
- B. Calculations demonstrating that the difference in the averages of 2 compressive strengths taken in the first one-third is no greater than 7.5 percent different than the averages of 2 compressive strengths taken in the last one-third of the concrete discharged from a single batch from the stationary paving mixer. Strength tests and cylinder preparation will be in conformance with the provisions of Section 90-9, "Compressive Strength;" and
- C. The mixer rotation speed and time of mixing before discharge that are required to produce a mix that meets the requirements above.

The discharge gate on the cement and supplementary cementitious material hoppers or the cement plus supplementary cementitious material hopper shall be designed to permit regulating the flow of cement, supplementary cementitious material, or cement plus supplementary cementitious material into the aggregate as directed by the Engineer.

If separate weigh boxes are used for each size of aggregate, the discharge gates shall permit regulating the flow of each size of aggregate as directed by the Engineer.

Material discharged from the several bins shall be controlled by gates or by mechanical conveyors. The means of withdrawal from the several bins, and of discharge from the weigh box, shall be interlocked so that not more than one bin can discharge at a time, and so that the weigh box cannot be tripped until the required quantity from each of the several bins has been deposited therein. Should a separate weigh box be used for each size of aggregate, all may be operated and discharged simultaneously.

If the discharge from the several bins is controlled by gates, each gate shall be actuated automatically so that the required mass is discharged into the weigh box, after which the gate shall automatically close and lock.

The automatic weighing system shall be designed so that all proportions required may be set on the weighing controller at the same time.

### **90-6 MIXING AND TRANSPORTING**

#### **90-6.01 GENERAL**

Concrete shall be mixed in mechanically operated mixers, except that when permitted by the Engineer, batches not exceeding 0.25-m<sup>3</sup> may be mixed by hand methods in conformance with the provisions in Section 90-6.05, "Hand-Mixing."

Equipment having components made of aluminum or magnesium alloys that would have contact with plastic concrete during mixing, transporting, or pumping of portland cement concrete shall not be used.

Concrete shall be homogeneous and thoroughly mixed, and there shall be no lumps or evidence of undispersed cementitious material.

Uniformity of concrete mixtures will be determined by differences in penetration as determined by California Test 533, or slump as determined by ASTM Designation: C 143, and by variations in the proportion of coarse aggregate as determined by California Test 529.

When the mix design specifies a penetration value, the difference in penetration, determined by comparing penetration tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed 10 mm. When the mix design specifies a slump value, the difference in slump, determined by comparing slump tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed the values given in the table below. Variation in the proportion of coarse aggregate will be determined by comparing the results of tests of 2 samples of mixed concrete from the same batch or truck mixer load and the difference between the 2 results shall not exceed 100 kg per cubic meter of concrete.

Average Slump	Maximum Permissible Difference
Less than 100-mm	25-mm
100-mm to 150-mm	38-mm
Greater than 150-mm to 225-mm	50-mm

The Contractor shall furnish samples of the freshly mixed concrete and provide satisfactory facilities for obtaining the samples.

#### **90-6.02 MACHINE MIXING**

Concrete mixers may be of the revolving drum or the revolving blade type, and the mixing drum or blades shall be operated uniformly at the mixing speed recommended by the manufacturer. Mixers and agitators that have an accumulation of hard concrete or mortar shall not be used.

The temperature of mixed concrete, immediately before placing, shall be not less than 10°C or more than 32°C. Aggregates and water shall be heated or cooled as necessary to produce concrete within these temperature limits. Neither aggregates nor mixing water shall be heated to exceed 65°C. If ice is used to cool the concrete, discharge of the mixer will not be permitted until all ice is melted.

The batch shall be so charged into the mixer that some water will enter in advance of cementitious materials and aggregates. All water shall be in the drum by the end of the first one-fourth of the specified mixing time.

Cementitious materials shall be batched and charged into the mixer by means that will not result either in loss of cementitious materials due to the effect of wind, in accumulation of cementitious materials on surfaces of conveyors or hoppers, or in other conditions that reduce or vary the required quantity of cementitious material in the concrete mixture.

Paving and stationary mixers shall be operated with an automatic timing device. The timing device and discharge mechanism shall be interlocked so that during normal operation no part of the batch will be discharged until the specified mixing time has elapsed.

The total elapsed time between the intermingling of damp aggregates and all cementitious materials and the start of mixing shall not exceed 30 minutes.

The size of batch shall not exceed the manufacturer's guaranteed capacity.

When producing concrete for pavement or base, suitable batch counters shall be installed and maintained in good operating condition at job site batching plants and stationary mixers. The batch counters shall indicate the exact number of batches proportioned and mixed.

Concrete shall be mixed and delivered to the job site by means of one of the following combinations of operations:

- A. Mixed completely in a stationary mixer and the mixed concrete transported to the point of delivery in truck agitators or in nonagitating hauling equipment (central-mixed concrete).
- B. Mixed partially in a stationary mixer, and the mixing completed in a truck mixer (shrink-mixed concrete).
- C. Mixed completely in a truck mixer (transit-mixed concrete).
- D. Mixed completely in a paving mixer.

Agitators may be truck mixers operating at agitating speed or truck agitators. Each mixer and agitator shall have attached thereto in a prominent place a metal plate or plates on which is plainly marked the various uses for which the equipment is designed, the manufacturer's guaranteed capacity of the drum or container in terms of the volume of mixed concrete and the speed of rotation of the mixing drum or blades.

Truck mixers shall be equipped with electrically or mechanically actuated revolution counters by which the number of revolutions of the drum or blades may readily be verified.

When shrink-mixed concrete is furnished, concrete that has been partially mixed at a central plant shall be transferred to a truck mixer and all requirements for transit-mixed concrete shall apply. No credit in the number of revolutions at mixing speed will be allowed for partial mixing in a central plant.

### **90-6.03 TRANSPORTING MIXED CONCRETE**

Mixed concrete may be transported to the delivery point in truck agitators or truck mixers operating at the speed designated by the manufacturer of the equipment as agitating speed, or in nonagitating hauling equipment, provided the consistency and workability of the mixed concrete upon discharge at the delivery point is suitable for adequate placement and consolidation in place, and provided the mixed concrete after hauling to the delivery point conforms to the provisions in Section 90-6.01, "General."

Truck agitators shall be loaded not to exceed the manufacturer's guaranteed capacity and shall maintain the mixed concrete in a thoroughly mixed and uniform mass during hauling.

Bodies of nonagitating hauling equipment shall be constructed so that leakage of the concrete mix, or any part thereof, will not occur at any time.

Concrete hauled in open-top vehicles shall be protected during hauling against rain or against exposure to the sun for more than 20 minutes when the ambient temperature exceeds 24°C.

No additional mixing water shall be incorporated into the concrete during hauling or after arrival at the delivery point, unless authorized by the Engineer. If the Engineer authorizes additional water to be incorporated into the concrete, the drum shall be revolved not less than 30 revolutions at mixing speed after the water is added and before discharge is commenced.

The rate of discharge of mixed concrete from truck mixer-agitators shall be controlled by the speed of rotation of the drum in the discharge direction with the discharge gate fully open.

If a truck mixer or agitator is used for transporting concrete to the delivery point, discharge shall be completed within 1.5 hours or before 250 revolutions of the drum or blades, whichever occurs first, after the introduction of the cement to the aggregates. Under conditions contributing to quick stiffening of the concrete, or if the temperature of the concrete is 30°C or above, the time allowed may be less than 1.5 hours. If an admixture is used to retard the set time, the temperature of the concrete shall not exceed 30°C, the time limit shall be 2 hours, and the revolution limitation shall be 300.

If nonagitating hauling equipment is used for transporting concrete to the delivery point, discharge shall be completed within one hour after the addition of the cement to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 30°C or above, the time between the introduction of cement to the aggregates and discharge shall not exceed 45 minutes.

Each load of concrete delivered at the job site shall be accompanied by a weighmaster certificate showing the mix identification number, nonrepeating load number, date and time at which the materials were batched, the total amount of water added to the load, and for transit-mixed concrete, the reading of the revolution counter at the time the truck mixer is charged with cement. This weighmaster certificate shall also show the actual scale masses (kilograms) for the ingredients batched. Theoretical or target batch masses shall not be used as a substitute for actual scale masses.

Weighmaster certificates shall be provided in printed form, or if approved by the Engineer, the data may be submitted in electronic media. Electronic media shall be presented in a tab-delimited format on a 90 mm diskette with a capacity of at least 1.4 megabytes. Captured data, for the ingredients represented by each batch shall be "line feed, carriage return" (LF CR) and "one line, separate record" with allowances for sufficient fields to satisfy the amount of data required by these specifications.

The Contractor may furnish a weighmaster certificate accompanied by a separate certificate that lists the actual batch masses or measurements for a load of concrete provided that both certificates are imprinted with the same nonrepeating load number that is unique to the contract and delivered to the job site with the load.

Weighmaster certificates furnished by the Contractor shall conform to the provisions in Section 9-1.01, "Measurement of Quantities."

**90-6.04 TIME OR AMOUNT OF MIXING**

Mixing of concrete in paving or stationary mixers shall continue for the required mixing time after all ingredients, except water and admixture, if added with the water, are in the mixing compartment of the mixer before any part of the batch is released. Transfer time in multiple drum mixers shall not be counted as part of the required mixing time.

The required mixing time, in paving or stationary mixers, of concrete used for concrete structures, except minor structures, shall be not less than 90 seconds or more than 5 minutes, except that when directed by the Engineer in writing, the requirements of the following paragraph shall apply.

The required mixing time, in paving or stationary mixers, except as provided in the preceding paragraph, shall be not less than 50 seconds or more than 5 minutes.

The minimum required revolutions at the mixing speed for transit-mixed concrete shall not be less than that recommended by the mixer manufacturer, but in no case shall the number of revolutions be less than that required to consistently produce concrete conforming to the provisions for uniformity in Section 90-6.01, "General."

When a high range water-reducing admixture is added to the concrete at the job site, the total number of revolutions shall not exceed 300.

**90-6.05 HAND-MIXING**

Hand-mixed concrete shall be made in batches of not more than 0.25-m<sup>3</sup> and shall be mixed on a watertight, level platform. The proper amount of coarse aggregate shall be measured in measuring boxes and spread on the platform and the fine aggregate shall be spread on this layer, the 2 layers being not more than 0.3-meters in total depth. On this mixture shall be spread the dry cementitious materials and the whole mass turned no fewer than 2 times dry; then sufficient clean water shall be added, evenly distributed, and the whole mass again turned no fewer than 3 times, not including placing in the carriers or forms.

**90-6.06 AMOUNT OF WATER AND PENETRATION**

The amount of water used in concrete mixes shall be regulated so that the penetration of the concrete as determined by California Test 533 or the slump of the concrete as determined by ASTM Designation: C 143 is within the nominal values shown in the following table. When the penetration or slump of the concrete is found to exceed the nominal values listed, the mixture of subsequent batches shall be adjusted to reduce the penetration or slump to a value within the nominal range shown. Batches of concrete with a penetration or slump exceeding the maximum values listed shall not be used in the work. If Type F or Type G chemical admixtures are added to the mix, the penetration requirements shall not apply and the slump shall not exceed 225 mm after the chemical admixtures are added.

Type of Work	Nominal		Maximum	
	Penetration (mm)	Slump (mm)	Penetration (mm)	Slump (mm)
Concrete Pavement	0 - 25	—	40	—
Non-reinforced concrete facilities	0 - 35	—	50	—
Reinforced concrete structures				
Sections over 300-mm thick	0 - 35	—	65	—
Sections 300-mm thick or less	0 - 50	—	75	—
Concrete placed under water	—	150 - 200	—	225
Cast-in-place concrete piles	65 - 90	130 - 180	100	200

The amount of free water used in concrete shall not exceed 183 kg/m<sup>3</sup>, plus 20 kg for each required 100 kg of cementitious material in excess of 325 kg/m<sup>3</sup>.

The term free water is defined as the total water in the mixture minus the water absorbed by the aggregates in reaching a saturated surface-dry condition.

If there are adverse or difficult conditions that affect the placing of concrete, the above specified penetration and free water content limitations may be exceeded providing the Contractor is granted permission by the Engineer in writing to increase the cementitious material content per cubic meter of concrete. The increase in water and cementitious material shall be at a ratio not to exceed 30 kg of water per added 100 kg of cementitious material per cubic meter. Full compensation for additional cementitious material and water added under these conditions shall be

considered as included in the contract price paid for the concrete work involved and no additional compensation will be allowed therefor.

The equipment for supplying water to the mixer shall be constructed and arranged so that the amount of water added can be measured accurately. Any method of discharging water into the mixer for a batch shall be accurate within 1.5 percent of the quantity of water required to be added to the mix for any position of the mixer. Tanks used to measure water shall be designed so that water cannot enter while water is being discharged into the mixer and discharge into the mixer shall be made rapidly in one operation without dribbling. All equipment shall be arranged so as to permit checking the amount of water delivered by discharging into measured containers.

## **90-7 CURING CONCRETE**

### **90-7.01 METHODS OF CURING**

Newly placed concrete shall be cured by the methods specified in this Section 90-7.01 and the special provisions.

#### **90-7.01A WATER METHOD**

The concrete shall be kept continuously wet by the application of water for a minimum curing period of 7 days after the concrete has been placed.

Cotton mats, rugs, carpets, or earth or sand blankets may be used as a curing medium to retain the moisture during the curing period.

If a curing medium consisting of cotton mats, rugs, carpets, polyethylene sheeting, polyethylene sheeting on burlap, or earth or sand blankets is to be used to retain the moisture, the entire surface of the concrete shall be kept damp by applying water with a nozzle that so atomizes the flow that a mist and not a spray is formed, until the surface of the concrete is covered with the curing medium. The moisture from the nozzle shall not be applied under pressure directly upon the concrete and shall not be allowed to accumulate on the concrete in a quantity sufficient to cause a flow or wash the surface. At the expiration of the curing period, the concrete surfaces shall be cleared of all curing media.

At the option of the Contractor, a curing medium consisting of white opaque polyethylene sheeting extruded onto burlap may be used to cure concrete structures. The polyethylene sheeting shall have a minimum thickness of 100  $\mu\text{m}$ , and shall be extruded onto 283.5-gram burlap.

At the option of the Contractor, a curing medium consisting of polyethylene sheeting may be used to cure concrete columns. The polyethylene sheeting shall have a minimum thickness of 250  $\mu\text{m}$  achieved in a single layer of material.

If the Contractor chooses to use polyethylene sheeting or polyethylene sheeting on burlap as a curing medium, these media and any joints therein shall be secured as necessary to provide moisture retention and shall be within 75 mm of the concrete at all points along the surface being cured. When these media are used, the temperature of the concrete shall be monitored during curing. If the temperature of the concrete cannot be maintained below 60°C, use of these curing media shall be disallowed.

When concrete bridge decks and flat slabs are to be cured without the use of a curing medium, the entire surface of the bridge deck or slab shall be kept damp by the application of water with an atomizing nozzle as specified above, until the concrete has set, after which the entire surface of the concrete shall be sprinkled continuously with water for a period of not less than 7 days.

#### **90-7.01B CURING COMPOUND METHOD**

Surfaces of the concrete that are exposed to the air shall be sprayed uniformly with a curing compound.

Curing compounds to be used shall be as follows:

1. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B, except the resin type shall be poly-alpha-methylstyrene.
2. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class B.
3. Pigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 2, Class A.
4. Nonpigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class B.



5. Nonpigmented curing compound conforming to the requirements in ASTM Designation: C 309, Type 1, Class A.
6. Nonpigmented curing compound with fugitive dye conforming to the requirements in ASTM Designation: C 309, Type 1-D, Class A.

The infrared scan for the dried vehicle from curing compound (1) shall match the infrared scan on file at the Transportation Laboratory.

The loss of water for each type of curing compound, when tested in conformance with the requirements in California Test 534, shall not be more than 0.15-kg/m<sup>2</sup> in 24 hours.

The curing compound to be used will be specified elsewhere in these specifications or in the special provisions.

If the use of curing compound is required or permitted elsewhere in these specifications or in the special provisions and no specific kind is specified, any of the curing compounds listed above may be used.

Curing compound shall be applied at a nominal rate of 3.7 m<sup>2</sup>/L, unless otherwise specified.

At any point, the application rate shall be within  $\pm 1.2$  m<sup>2</sup>/L of the nominal rate specified, and the average application rate shall be within  $\pm 0.5$  m<sup>2</sup>/L of the nominal rate specified when tested in conformance with the requirements in California Test 535. Runs, sags, thin areas, skips, or holidays in the applied curing compound shall be evidence that the application is not satisfactory.

Curing compounds shall be applied using power operated spray equipment. The power operated spraying equipment shall be equipped with an operational pressure gage and a means of controlling the pressure. Hand spraying of small and irregular areas that are not reasonably accessible to mechanical spraying equipment, in the opinion of the Engineer, may be permitted.

The curing compound shall be applied to the concrete following the surface finishing operation, immediately before the moisture sheen disappears from the surface, but before any drying shrinkage or craze cracks begin to appear. In the event of any drying or cracking of the surface, application of water with an atomizing nozzle as specified in Section 90-7.01A, "Water Method," shall be started immediately and shall be continued until application of the compound is resumed or started; however, the compound shall not be applied over any resulting freestanding water. Should the film of compound be damaged from any cause before the expiration of 7 days after the concrete is placed in the case of structures and 72 hours in the case of pavement, the damaged portion shall be repaired immediately with additional compound.

At the time of use, compounds containing pigments shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. A paddle shall be used to loosen all settled pigment from the bottom of the container, and a power driven agitator shall be used to disperse the pigment uniformly throughout the vehicle.

Agitation shall not introduce air or other foreign substance into the curing compound.

The manufacturer shall include in the curing compound the necessary additives for control of sagging, pigment settling, leveling, de-emulsification, or other requisite qualities of a satisfactory working material. Pigmented curing compounds shall be manufactured so that the pigment does not settle badly, does not cake or thicken in the container, and does not become granular or curdled. Settlement of pigment shall be a thoroughly wetted, soft, mushy mass permitting the complete and easy vertical penetration of a paddle. Settled pigment shall be easily redispersed, with minimum resistance to the sideways manual motion of the paddle across the bottom of the container, to form a smooth uniform product of the proper consistency.

Curing compounds shall remain sprayable at temperatures above 4°C and shall not be diluted or altered after manufacture.

The curing compound shall be packaged in clean 1040-L totes, 210-L barrels, or 19-L pails, or shall be supplied from a suitable storage tank located at the job site. The containers shall comply with "Title 49, Code of Federal Regulations, Hazardous Materials Regulations." The 1040-L totes and the 210-L barrels shall have removable lids and airtight fasteners. The 19-L pails shall be round and have standard full open head and bail. Lids with bungholes will not be permitted. Settling or separation of solids in containers, except tanks, must be completely redispersed with low speed mixing prior to use, in conformance with these specifications and the manufacturer's recommendations. Mixing shall be accomplished either manually by use of a paddle or by use of a mixing blade driven by a drill motor, at low speed. Mixing blades shall be the type used for mixing paint. On-site storage tanks shall be kept clean and free of contaminants. Each tank shall have a permanent system designed to completely redisperse settled material without introducing air or other foreign substances.

Steel containers and lids shall be lined with a coating that will prevent destructive action by the compound or chemical agents in the air space above the compound. The coating shall not come off the container or lid as skins. Containers shall be filled in a manner that will prevent skinning. Plastic containers shall not react with the compound.

Each container shall be labeled with the manufacturer's name, kind of curing compound, batch number, volume, date of manufacture, and volatile organic compound (VOC) content. The label shall also warn that the curing compound containing pigment shall be well stirred before use. Precautions concerning the handling and the application of curing compound shall be shown on the label of the curing compound containers in conformance with the Construction Safety Orders and General Industry Safety Orders of the State.

Containers of curing compound shall be labeled to indicate that the contents fully comply with the rules and regulations concerning air pollution control in the State.

When the curing compound is shipped in tanks or tank trucks, a shipping invoice shall accompany each load. The invoice shall contain the same information as that required herein for container labels.

Curing compound will be sampled by the Engineer at the source of supply, at the job site, or at both locations.

Curing compound shall be formulated so as to maintain the specified properties for a minimum of one year. The Engineer may require additional testing before use to determine compliance with these specifications if the compound has not been used within one year or whenever the Engineer has reason to believe the compound is no longer satisfactory.

Tests will be conducted in conformance with the latest ASTM test methods and methods in use by the Transportation Laboratory.

#### **90-7.01C WATERPROOF MEMBRANE METHOD**

The exposed finished surfaces of concrete shall be sprayed with water, using a nozzle that so atomizes the flow that a mist and not a spray is formed, until the concrete has set, after which the curing membrane, shall be placed. The curing membrane shall remain in place for a period of not less than 72 hours.

Sheeting material for curing concrete shall conform to the requirements in AASHTO Designation: M 171 for white reflective materials.

The sheeting material shall be fabricated into sheets of such width as to provide a complete cover for the entire concrete surface. Joints in the sheets shall be securely cemented together in such a manner as to provide a waterproof joint. The joint seams shall have a minimum lap of 100 mm.

The sheets shall be securely weighted down by placing a bank of earth on the edges of the sheets or by other means satisfactory to the Engineer.

Should any portion of the sheets be broken or damaged before the expiration of 72 hours after being placed, the broken or damaged portions shall be immediately repaired with new sheets properly cemented into place.

Sections of membrane that have lost their waterproof qualities or have been damaged to such an extent as to render them unfit for curing the concrete shall not be used.

#### **90-7.01D FORMS-IN-PLACE METHOD**

Formed surfaces of concrete may be cured by retaining the forms in place. The forms shall remain in place for a minimum period of 7 days after the concrete has been placed, except that for members over 0.5-m in least dimension the forms shall remain in place for a minimum period of 5 days.

Joints in the forms and the joints between the end of forms and concrete shall be kept moisture tight during the curing period. Cracks in the forms and cracks between the forms and the concrete shall be resealed by methods subject to the approval of the Engineer.

#### **90-7.02 CURING PAVEMENT**

The entire exposed area of the pavement, including edges, shall be cured by the waterproof membrane method, or curing compound method using curing compound (1) or (2) as the Contractor may elect. Should the side forms be removed before the expiration of 72 hours following the start of curing, the exposed pavement edges shall also be cured. If the pavement is cured by means of the curing compound method, the sawcut and all portions of the curing compound that have been disturbed by sawing operations shall be restored by spraying with additional curing compound.

Curing shall commence as soon as the finishing process provided in Section 40-1.10, "Final Finishing," has been completed. The method selected shall conform to the provisions in Section 90-7.01, "Methods of Curing."

When the curing compound method is used, the compound shall be applied to the entire pavement surface by mechanical sprayers. Spraying equipment shall be of the fully atomizing type equipped with a tank agitator that provides for continual agitation of the curing compound during the time of application. The spray shall be adequately protected against wind, and the nozzles shall be so oriented or moved mechanically transversely as to result in the minimum specified rate of coverage being applied uniformly on exposed faces. Hand spraying of small and irregular areas, and areas inaccessible to mechanical spraying equipment, in the opinion of the Engineer, will be

permitted. When the ambient air temperature is above 15°C, the Contractor shall fog the surface of the concrete with a fine spray of water as specified in Section 90-7.01A, "Water Method." The surface of the pavement shall be kept moist between the hours of 10:00 a.m. and 4:30 p.m. on the day the concrete is placed. However, the fogging done after the curing compound has been applied shall not begin until the compound has set sufficiently to prevent displacement. Fogging shall be discontinued if ordered in writing by the Engineer.

### **90-7.03 CURING STRUCTURES**

Newly placed concrete for cast-in-place structures, other than highway bridge decks, shall be cured by the water method, the forms-in-place method, or, as permitted herein, by the curing compound method, in conformance with the provisions in Section 90-7.01, "Methods of Curing."

The curing compound method using a pigmented curing compound may be used on concrete surfaces of construction joints, surfaces that are to be buried underground, and surfaces where only ordinary surface finish is to be applied and on which a uniform color is not required and that will not be visible from a public traveled way. If the Contractor elects to use the curing compound method on the bottom slab of box girder spans, the curing compound shall be curing compound (1).

The top surface of highway bridge decks shall be cured by both the curing compound method and the water method. The curing compound shall be curing compound (1).

Concrete surfaces of minor structures, as defined in Section 51-1.02, "Minor Structures," shall be cured by the water method, the forms-in-place method or the curing compound method.

When deemed necessary by the Engineer during periods of hot weather, water shall be applied to concrete surfaces being cured by the curing compound method or by the forms-in-place method, until the Engineer determines that a cooling effect is no longer required. Application of water for this purpose will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."

### **90-7.04 CURING PRECAST CONCRETE MEMBERS**

Precast concrete members shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing." Curing shall be provided for the minimum time specified for each method or until the concrete reaches its design strength, whichever is less. Steam curing may also be used for precast members and shall conform to the following provisions:

- A. After placement of the concrete, members shall be held for a minimum 4-hour presteaming period. If the ambient air temperature is below 10°C, steam shall be applied during the presteaming period to hold the air surrounding the member at a temperature between 10°C and 32°C.
- B. To prevent moisture loss on exposed surfaces during the presteaming period, members shall be covered as soon as possible after casting or the exposed surfaces shall be kept wet by fog spray or wet blankets.
- C. Enclosures for steam curing shall allow free circulation of steam about the member and shall be constructed to contain the live steam with a minimum moisture loss. The use of tarpaulins or similar flexible covers will be permitted, provided they are kept in good repair and secured in such a manner as to prevent the loss of steam and moisture.
- D. Steam at the jets shall be at low pressure and in a saturated condition. Steam jets shall not impinge directly on the concrete, test cylinders, or forms. During application of the steam, the temperature rise within the enclosure shall not exceed 22°C per hour. The curing temperature throughout the enclosure shall not exceed 65°C and shall be maintained at a constant level for a sufficient time necessary to develop the required transfer strength. Control cylinders shall be covered to prevent moisture loss and shall be placed in a location where temperature is representative of the average temperature of the enclosure.
- E. Temperature recording devices that will provide an accurate, continuous, permanent record of the curing temperature shall be provided. A minimum of one temperature recording device per 60 m of continuous bed length will be required for checking temperature.
- F. Members in pretension beds shall be detensioned immediately after the termination of steam curing while the concrete and forms are still warm, or the temperature under the enclosure shall be maintained above 15°C until the stress is transferred to the concrete.
- G. Curing of precast concrete will be considered completed after termination of the steam curing cycle.

### **90-7.05 CURING PRECAST PRESTRESSED CONCRETE PILES**

Newly placed concrete for precast prestressed concrete piles shall be cured in conformance with the provisions in Section 90-7.04, "Curing Precast Concrete Members," except that piles in a corrosive environment shall be cured as follows:

- A. Piles shall be either steam cured or water cured. If water curing is used, the piles shall be kept continuously wet by the application of water in conformance with the provisions in Section 90-7.01A, "Water Method."
- B. If steam curing is used, the steam curing provisions in Section 90-7.04, "Curing Precast Concrete Members," shall apply except that the piles shall be kept continuously wet for their entire length for a period of not less than 3 days, including the holding and steam curing periods.

### **90-7.06 CURING SLOPE PROTECTION**

Concrete slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Concreted-rock slope protection shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing," with a blanket of earth kept wet for 72 hours, or by sprinkling with a fine spray of water every 2 hours during the daytime for a period of 3 days.

### **90-7.07 CURING MISCELLANEOUS CONCRETE WORK**

Exposed surfaces of curbs shall be cured by pigmented curing compounds as specified in Section 90-7.01B, "Curing Compound Method."

Concrete sidewalks, gutter depressions, island paving, curb ramps, driveways, and other miscellaneous concrete areas shall be cured in conformance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Shotcrete shall be cured for at least 72 hours by spraying with water, by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

Mortar and grout shall be cured by keeping the surface damp for 3 days.

After placing, the exposed surfaces of sign structure foundations, including pedestal portions, if constructed, shall be cured for at least 72 hours by spraying with water, by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

## **90-8 PROTECTING CONCRETE**

### **90-8.01 GENERAL**

In addition to the provisions in Section 7-1.16, "Contractor's Responsibility for the Work and Materials," the Contractor shall protect concrete as provided in this Section 90-8. If required by the Engineer, the Contractor shall submit a written outline of the proposed methods for protecting the concrete.

The Contractor shall protect concrete from damage from any cause, which shall include, but not be limited to: rain, heat, cold, wind, Contractor's actions, and actions of others.

Concrete shall not be placed on frozen or ice-coated ground or subgrade nor on ice-coated forms, reinforcing steel, structural steel, conduits, precast members, or construction joints.

Under rainy conditions, placing of concrete shall be stopped before the quantity of surface water is sufficient to damage surface mortar or cause a flow or wash of the concrete surface, unless the Contractor provides adequate protection against damage.

Concrete that has been frozen or damaged by other causes, as determined by the Engineer, shall be removed and replaced by the Contractor at the Contractor's expense.

### **90-8.02 PROTECTING CONCRETE STRUCTURES**

Structure concrete and shotcrete used as structure concrete shall be maintained at a temperature of not less than 7°C for 72 hours after placing and at not less than 4°C for an additional 4 days.

### **90-8.03 PROTECTING CONCRETE PAVEMENT**

Pavement concrete shall be maintained at a temperature of not less than 4°C for 72 hours.

Except as provided in Section 7-1.08, "Public Convenience," the Contractor shall protect concrete pavement against construction and other activities that abrade, scar, discolor, reduce texture depth, lower coefficient of friction, or otherwise damage the surface. Stockpiling, drifting, or excessive spillage of soil, gravel, petroleum

products, and concrete or asphalt mixes on the surface of concrete pavement is prohibited unless otherwise specified in these specifications, the special provisions or permitted by the Engineer.

If ordered by the Engineer or shown on the plans or specified in the special provisions, pavement crossings shall be constructed for the convenience of public traffic. The material and work necessary for the construction of the crossings, and their subsequent removal and disposal, will be paid for at the contract unit prices for the items of work involved and if there are no contract items for the work involved, payment for pavement crossings will be made by extra work as provided in Section 4-1.03D, "Extra Work.". Where public traffic will be required to cross over the new pavement, Type III portland cement may be used in concrete, if permitted in writing by the Engineer. The pavement may be opened to traffic as soon as the concrete has developed a modulus of rupture of 3.8 MPa. The modulus of rupture will be determined by California Test 523.

No traffic or Contractor's equipment, except as hereinafter provided, will be permitted on the pavement before a period of 10 days has elapsed after the concrete has been placed, nor before the concrete has developed a modulus of rupture of at least 3.8 MPa. Concrete that fails to attain a modulus of rupture of 3.8 MPa within 10 days shall not be opened to traffic until directed by the Engineer.

Equipment for sawing weakened plane joints will be permitted on the pavement as specified in Section 40-1.08B, "Weakened Plane Joints."

When requested in writing by the Contractor, the tracks on one side of paving equipment will be permitted on the pavement after a modulus of rupture of 2.4 MPa has been attained, provided that:

- A. Unit pressure exerted on the pavement by the paver shall not exceed 135 kPa;
- B. Tracks with cleats, grousers, or similar protuberances shall be modified or shall travel on planks or equivalent protective material, so that the pavement is not damaged; and
- C. No part of the track shall be closer than 0.3-m from the edge of pavement.

In case of visible cracking of, or other damage to the pavement, operation of the paving equipment on the pavement shall be immediately discontinued.

Damage to the pavement resulting from early use of pavement by the Contractor's equipment as provided above shall be repaired by the Contractor.

The State will furnish the molds and machines for testing the concrete for modulus of rupture, and the Contractor, at the Contractor's expense, shall furnish the material and whatever labor the Engineer may require.

## **90-9 COMPRESSIVE STRENGTH**

### **90-9.01 GENERAL**

Concrete compressive strength requirements consist of a minimum strength that shall be attained before various loads or stresses are applied to the concrete and, for concrete designated by strength, a minimum strength at the age of 28 days or at the age otherwise allowed in Section 90-1.01, "Description." The various strengths required are specified in these specifications or the special provisions or are shown on the plans.

The compressive strength of concrete will be determined from test cylinders that have been fabricated from concrete sampled in conformance with the requirements of California Test 539. Test cylinders will be molded and initially field cured in conformance with California Test 540. Test cylinders will be cured and tested after receipt at the testing laboratory in conformance with the requirements of California Test 521. A strength test shall consist of the average strength of 2 cylinders fabricated from material taken from a single load of concrete, except that, if any cylinder should show evidence of improper sampling, molding, or testing, that cylinder shall be discarded and the strength test shall consist of the strength of the remaining cylinder.

When concrete compressive strength is specified as a prerequisite to applying loads or stresses to a concrete structure or member, test cylinders for other than steam cured concrete will be cured in conformance with Method 1 of California Test 540. The compressive strength of concrete determined for these purposes will be evaluated on the basis of individual tests.

When concrete is designated by 28-day compressive strength rather than by cementitious material content, the concrete strength to be used as a basis for acceptance of other than steam cured concrete will be determined from cylinders cured in conformance with Method 1 of California Test 540. If the result of a single compressive strength test at the maximum age specified or allowed is below the specified strength but is 95 percent or more of the specified strength, the Contractor shall make corrective changes, subject to approval of the Engineer, in the mix proportions or in the concrete fabrication procedures, before placing additional concrete, and shall pay to the State \$14 for each in-place cubic meter of concrete represented by the deficient test. If the result of a single compressive strength test at the maximum age specified or allowed is below 95 percent of the specified strength, but is 85 percent

or more of the specified strength, the Contractor shall make the corrective changes specified above, and shall pay to the State \$20 for each in place cubic meter of concrete represented by the deficient test. In addition, such corrective changes shall be made when the compressive strength of concrete tested at 7 days indicates, in the judgment of the Engineer, that the concrete will not attain the required compressive strength at the maximum age specified or allowed. Concrete represented by a single test that indicates a compressive strength of less than 85 percent of the specified 28-day compressive strength will be rejected in conformance with the provisions in Section 6-1.04, "Defective Materials."

If the test result indicates that the compressive strength at the maximum curing age specified or allowed is below the specified strength, but is 85 percent or more of the specified strength, payments to the State as required above shall be made, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength of the concrete placed in the work meets or exceeds the specified 28-day compressive strength. If the test result indicates a compressive strength at the maximum curing age specified or allowed below 85 percent, the concrete represented by that test will be rejected, unless the Contractor, at the Contractor's expense, obtains and submits evidence acceptable to the Engineer that the strength and quality of the concrete placed in the work are acceptable. If the evidence consists of tests made on cores taken from the work, the cores shall be obtained and tested in conformance with the requirements in ASTM Designation: C 42.

No single compressive strength test shall represent more than 250 m<sup>3</sup>.

If a precast concrete member is steam cured, the compressive strength of the concrete will be determined from test cylinders that have been handled and stored in conformance with Method 3 of California Test 540. The compressive strength of steam cured concrete will be evaluated on the basis of individual tests representing specific portions of production. If the concrete is designated by 28-day compressive strength rather than by cementitious material content, the concrete shall be considered to be acceptable whenever its compressive strength reaches the specified 28-day compressive strength provided that strength is reached in not more than the maximum number of days specified or allowed after the member is cast.

When concrete is specified by compressive strength, prequalification of materials, mix proportions, mixing equipment, and procedures proposed for use will be required prior to placement of the concrete. Prequalification shall be accomplished by the submission of acceptable certified test data or trial batch reports by the Contractor. Prequalification data shall be based on the use of materials, mix proportions, mixing equipment, procedures, and size of batch proposed for use in the work.

Certified test data, in order to be acceptable, shall indicate that not less than 90 percent of at least 20 consecutive tests exceed the specified strength at the maximum number of cure days specified or allowed, and none of those tests are less than 95 percent of specified strength. Strength tests included in the data shall be the most recent tests made on concrete of the proposed mix design and all shall have been made within one year of the proposed use of the concrete.

Trial batch test reports, in order to be acceptable, shall indicate that the average compressive strength of 5 consecutive concrete cylinders, taken from a single batch, at not more than 28 days (or the maximum age allowed) after molding shall be at least 4 MPa greater than the specified 28-day compressive strength, and no individual cylinder shall have a strength less than the specified strength at the maximum age specified or allowed. Data contained in the report shall be from trial batches that were produced within one year of the proposed use of specified strength concrete in the project. Whenever air-entrainment is required, the air content of trial batches shall be equal to or greater than the air content specified for the concrete without reduction due to tolerances.

Tests shall be performed in conformance with either the appropriate California Test methods or the comparable ASTM test methods. Equipment employed in testing shall be in good condition and shall be properly calibrated. If the tests are performed during the life of the contract, the Engineer shall be notified sufficiently in advance of performing the tests in order to witness the test procedures.

The certified test data and trial batch test reports shall include the following information:

- A. Date of mixing.
- B. Mixing equipment and procedures used.
- C. The size of batch in cubic meters and the mass, type, and source of all ingredients used.
- D. Penetration or slump (if the concrete will be placed under water or placed in cast-in-place concrete piles) of the concrete.
- E. The air content of the concrete if an air-entraining admixture is used.
- F. The age at time of testing and strength of all concrete cylinders tested.

Certified test data and trial batch test reports shall be signed by an official of the firm that performed the tests.

When approved by the Engineer, concrete from trial batches may be used in the work at locations where concrete of a lower quality is required and the concrete will be paid for as the type or class of concrete required at that location.

After materials, mix proportions, mixing equipment, and procedures for concrete have been prequalified for use, additional prequalification by testing of trial batches will be required prior to making changes that, in the judgment of the Engineer, could result in a strength of concrete below that specified.

The Contractor's attention is directed to the time required to test trial batches and the Contractor shall be responsible for production of trial batches at a sufficiently early date so that the progress of the work is not delayed.

When precast concrete members are manufactured at the plant of an established manufacturer of precast concrete members, the mix proportions of the concrete shall be determined by the Contractor, and a trial batch and prequalification of the materials, mix proportions, mixing equipment, and procedures will not be required.

## **90-10 MINOR CONCRETE**

### **90-10.01 GENERAL**

Concrete for minor structures, slope paving, curbs, sidewalks and other concrete work, when designated as minor concrete on the plans, in the specifications, or in the contract item, shall conform to the provisions specified herein.

The Engineer, at the Engineer's discretion, will inspect and test the facilities, materials and methods for producing the concrete to ensure that minor concrete of the quality suitable for use in the work is obtained.

### **90-10.02 MATERIALS**

Minor concrete shall conform to the following requirements:

#### **90-10.02A CEMENTITIOUS MATERIAL**

Cementitious material shall conform to the provisions in Section 90-1.01, "Description."

#### **90-10.02B AGGREGATE**

Aggregate shall be clean and free from deleterious coatings, clay balls, roots, and other extraneous materials.

Use of crushed concrete or reclaimed aggregate is acceptable only if the aggregate satisfies all aggregate requirements.

The Contractor shall submit to the Engineer for approval, a grading of the combined aggregate proposed for use in the minor concrete. After acceptance of the grading, aggregate furnished for minor concrete shall conform to that grading, unless a change is authorized in writing by the Engineer.

The Engineer may require the Contractor to furnish periodic test reports of the aggregate grading furnished. The maximum size of aggregate used shall be at the option of the Contractor, but in no case shall the maximum size be larger than 37.5 mm or smaller than 19 mm.

The Engineer may waive, in writing, the gradation requirements in this Section 90-10.02B, if, in the Engineer's opinion, the furnishing of the gradation is not necessary for the type or amount of concrete work to be constructed.

#### **90-10.02C WATER**

Water used for washing, mixing, and curing shall be free from oil, salts, and other impurities that would discolor or etch the surface or have an adverse affect on the quality of the concrete.

#### **90-10.02D ADMIXTURES**

The use of admixtures shall conform to the provisions in Section 90-4, "Admixtures."

### **90-10.03 PRODUCTION**

Cementitious material, water, aggregate, and admixtures shall be stored, proportioned, mixed, transported, and discharged in conformance with recognized standards of good practice that will result in concrete that is thoroughly and uniformly mixed, that is suitable for the use intended, and that conforms to requirements specified herein. Recognized standards of good practice are outlined in various industry publications such as are issued by American Concrete Institute, AASHTO, or the Department.

The cementitious material content of minor concrete shall conform to the provisions in Section 90-1.01, "Description."

The amount of water used shall result in a consistency of concrete conforming to the provisions in Section 90-6.06, "Amount of Water and Penetration." Additional mixing water shall not be incorporated into the concrete during hauling or after arrival at the delivery point, unless authorized by the Engineer.

Discharge of ready-mixed concrete from the transporting vehicle shall be made while the concrete is still plastic and before stiffening occurs. An elapsed time of 1.5 hours (one hour in nonagitating hauling equipment), or more than 250 revolutions of the drum or blades, after the introduction of the cementitious material to the aggregates, or a temperature of concrete of more than 32°C will be considered conditions contributing to the quick stiffening of concrete. The Contractor shall take whatever action is necessary to eliminate quick stiffening, except that the addition of water will not be permitted.

The required mixing time in stationary mixers shall be not less than 50 seconds or more than 5 minutes.

The minimum required revolutions at mixing speed for transit-mixed concrete shall be not less than that recommended by the mixer manufacturer, and shall be increased, if necessary, to produce thoroughly and uniformly mixed concrete.

When a high range water-reducing admixture is added to the concrete at the job site, the total number of revolutions shall not exceed 300.

Each load of ready-mixed concrete shall be accompanied by a weighmaster certificate that shall be delivered to the Engineer at the discharge location of the concrete, unless otherwise directed by the Engineer. The weighmaster certificate shall be clearly marked with the date and time of day when the load left the batching plant and, if hauled in truck mixers or agitators, the time the mixing cycle started.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," shall be furnished to the Engineer, prior to placing minor concrete from a source not previously used on the contract, stating that minor concrete to be furnished meets contract requirements, including minimum cementitious material content specified.

#### **90-10.04 CURING MINOR CONCRETE**

Curing minor concrete shall conform to the provisions in Section 90-7, "Curing Concrete."

#### **90-10.05 PROTECTING MINOR CONCRETE**

Protecting minor concrete shall conform to the provisions in Section 90-8, "Protecting Concrete," except the concrete shall be maintained at a temperature of not less than 4°C for 72 hours after placing.

#### **90-10.06 MEASUREMENT AND PAYMENT**

Minor concrete will be measured and paid for in conformance with the provisions specified in the various sections of these specifications covering concrete construction when minor concrete is specified in the specifications, shown on the plans, or indicated by contract item in the Engineer's Estimate.

### **90-11 MEASUREMENT AND PAYMENT**

#### **90-11.01 MEASUREMENT**

Portland cement concrete will be measured in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.

For concrete measured at the mixer, the volume in cubic meters shall be computed as the total mass of the batch in kilograms divided by the density of the concrete in kilograms per cubic meter. The total mass of the batch shall be calculated as the sum of all materials, including water, entering the batch. The density of the concrete will be determined in conformance with the requirements in California Test 518.

#### **90-11.02 PAYMENT**

Portland cement concrete will be paid for in conformance with the provisions specified in the various sections of these specifications covering construction requiring concrete.

Full compensation for furnishing and incorporating admixtures required by these specifications or the special provisions will be considered as included in the contract prices paid for the concrete involved and no additional compensation will be allowed therefor.

Should the Engineer order the Contractor to incorporate any admixtures in the concrete when their use is not required by these specifications or the special provisions, furnishing the admixtures and adding them to the concrete will be paid for as extra work as provided in Section 4-1.03D, "Extra Work."



Should the Contractor use admixtures in conformance with the provisions in Section 90-4.05, "Optional Use of Chemical Admixtures," or Section 90-4.07, "Optional Use of Air-entraining Admixtures," or should the Contractor request and obtain permission to use other admixtures for the Contractor's benefit, the Contractor shall furnish those admixtures and incorporate them into the concrete at the Contractor's expense and no additional compensation will be allowed therefor.

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**SECTION 91 PAINT  
(Issued 11-18-05)**

**Replace Section 91-3 with:  
91-3 PAINTS FOR TIMBER**

**91-3.01 WOOD PRIMER, LATEX-BASE**

**Classification:**

This specification covers a ready-mixed priming paint for use on unpainted wood or exterior woodwork. It shall conform with the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) for exterior wood primers, and be listed on the Exterior Latex Wood Primer MPI List Number 6.

**91-3.02 PAINT; LATEX-BASE FOR EXTERIOR WOOD, WHITE AND TINTS**

**Classification:**

This specification covers a ready-mixed paint for use on wood surfaces subject to outside exposures. This paint shall conform to the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) for Paint, Latex, Exterior, and shall be listed on the following MPI Approved Products List:

- A. Exterior Latex, Flat MPI Gloss Level 1, MPI List Number 10.
- B. Exterior Latex, Semi-Gloss, MPI Gloss Level 5, MPI List Number 11.
- C. Exterior Latex, Gloss, MPI Gloss Level 6, MPI List Number 119.

Unpainted wood shall first be primed with wood primer conforming to the provisions in Section 91-3.01, "Wood Primer, Latex-Base."

**Replace Section 91-4 with:  
91-4 MISCELLANEOUS PAINTS**

**91-4.01 THROUGH 91-4.04 (BLANK)**

**91-4.05 PAINT; ACRYLIC EMULSION, EXTERIOR WHITE AND LIGHT AND MEDIUM TINTS**

**Classification:**

This specification covers an acrylic emulsion paint designed for use on exterior masonry. This paint shall conform to the requirements in the Detailed Performance Standards of the Master Painters Institute (MPI) for Paint, Latex, Exterior, and shall be listed on the following MPI Approved Products Lists:

- A. Exterior Latex, Flat MPI Gloss Level 1, MPI List Number 10.
- B. Exterior Latex, Semi-Gloss, MPI Gloss Level 5, MPI List Number 11.
- C. Exterior Latex, Gloss, MPI Gloss Level 6, MPI List Number 119.

This paint may be tinted by using "universal" or "all purpose" concentrates.

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**SECTION 92 ASPHALTS**  
**(Issued 03-21-08)**

**Replace Section 92 with:**  
**SECTION 92 ASPHALTS**

**92-1.01 DESCRIPTION**

Asphalt is refined petroleum or a mixture of refined liquid asphalt and refined solid asphalt that are prepared from crude petroleum. Asphalt is:

1. Free from residues caused by the artificial distillation of coal, coal tar, or paraffin
2. Free from water
3. Homogeneous

**92-1.02 MATERIALS**

**GENERAL**

Furnish asphalt under the Department's "Certification Program for Suppliers of Asphalt." The Department maintains the program requirements, procedures, and a list of approved suppliers at:

<http://www.dot.ca.gov/hq/esc/Translab/fpm/fpmcoc.htm>

Transport, store, use, and dispose of asphalt safely.

Prevent the formation of carbonized particles caused by overheating asphalt during manufacturing or construction.

**GRADES**

Performance graded (PG) asphalt binder is:

Performance Graded Asphalt Binder

Property	AASHTO Test Method	Specification				
		Grade				
		PG 58-22 <sup>a</sup>	PG 64-10	PG 64-16	PG 64-28	PG 70-10
Original Binder						
Flash Point, Minimum °C	T 48	230	230	230	230	230
Solubility, Minimum % <sup>b</sup>	T 44	99	99	99	99	99
Viscosity at 135°C, <sup>c</sup> Maximum, Pa·s	T 316	3.0	3.0	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 1.00	64 1.00	64 1.00	64 1.00	70 1.00
RTFO Test, <sup>e</sup> Mass Loss, Maximum, %	T 240	1.00	1.00	1.00	1.00	1.00
RTFO Test Aged Binder						
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 2.20	64 2.20	64 2.20	64 2.20	70 2.20
Ductility at 25°C Minimum, cm	T 51	75	75	75	75	75
PAV <sup>f</sup> Aging, Temperature, °C	R 28	100	100	100	100	110
RTFO Test and PAV Aged Binder						
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum G*/sin(delta), kPa	T 315	22 <sup>d</sup> 5000	31 <sup>d</sup> 5000	28 <sup>d</sup> 5000	22 <sup>d</sup> 5000	34 <sup>d</sup> 5000
Creep Stiffness, Test Temperature, °C Maximum S-value, Mpa Minimum M-value	T 313	-12 300 0.300	0 300 0.300	-6 300 0.300	-18 300 0.300	0 300 0.300

Notes:

- Use as asphalt rubber base stock for high mountain and high desert area.
- The Engineer waives this specification if the supplier is a Quality Supplier as defined by the Department's "Certification Program for Suppliers of Asphalt."
- The Engineer waives this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.
- Test the sample at 3°C higher if it fails at the specified test temperature. G\*/sin(delta) remains 5000 kPa maximum.
- "RTFO Test" means the asphaltic residue obtained using the Rolling Thin Film Oven Test, AASHTO Test Method T 240 or ASTM Designation: D 2872. The residue from mass change determination may be used for other tests.
- "PAV" means Pressurized Aging Vessel.

Performance graded polymer modified asphalt binder (PG Polymer Modified) is:

Performance Graded Polymer Modified Asphalt Binder <sup>a</sup>

Property	AASHTO Test Method	Specification Grade		
		PG 58-34 PM	PG 64-28 PM	PG 76-22 PM
Original Binder				
Flash Point, Minimum °C	T 48	230	230	230
Solubility, Minimum % <sup>b</sup>	T 44 <sup>c</sup>	98.5	98.5	98.5
Viscosity at 135°C, <sup>d</sup> Maximum, Pa·s	T 316	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 1.00	64 1.00	76 1.00
RTFO Test , Mass Loss, Maximum, %	T 240	1.00	1.00	1.00
RTFO Test Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 2.20	64 2.20	76 2.20
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum (delta), %	T 315	Note e 80	Note e 80	Note e 80
Elastic Recovery <sup>f</sup> , Test Temp., °C Minimum recovery, %	T 301	25 75	25 75	25 65
PAV <sup>g</sup> Aging, Temperature, °C	R 28	100	100	110
RTFO Test and PAV Aged Binder				
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum G*sin(delta), kPa	T 315	16 5000	22 5000	31 5000
Creep Stiffness, Test Temperature, °C Maximum S-value, MPa Minimum M-value	T 313	-24 300 0.300	-18 300 0.300	-12 300 0.300

Notes:

- Do not modify PG Polymer Modified using acid modification.
- The Engineer waives this specification if the supplier is a Quality Supplier as defined by the Department's "Certification Program for Suppliers of Asphalt."
- The Department allows ASTM D 5546 instead of AASHTO T 44
- The Engineer waives this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.
- Test temperature is the temperature at which G\*/sin(delta) is 2.2 kPa. A graph of log G\*/sin(delta) plotted against temperature may be used to determine the test temperature when G\*/sin(delta) is 2.2 kPa. A graph of (delta) versus temperature may be used to determine delta at the temperature when G\*/sin(delta) is 2.2 kPa. The Engineer also accepts direct measurement of (delta) at the temperature when G\*/sin(delta) is 2.2 kPa.
- Tests without a force ductility clamp may be performed.
- "PAV" means Pressurized Aging Vessel.

**SAMPLING**

Provide a sampling device in the asphalt feed line connecting the plant storage tanks to the asphalt weighing system or spray bar. Make the sampling device accessible between 600 and 750 mm above the platform. Provide a receptacle for flushing the sampling device.

Include with the sampling device a valve:

1. Between 10 and 20 mm in diameter
2. Manufactured in a manner that a one-liter sample may be taken slowly at any time during plant operations
3. Maintained in good condition

Replace failed valves.

In the Engineer's presence, take 2 one-liter samples per operating day. Provide round, friction top, one-liter containers for storing samples.

**92-1.03 EXECUTION**

If asphalt is applied, you must comply with the heating and application specifications for liquid asphalt in Section 93, "Liquid Asphalts."

**92-1.04 MEASUREMENT**

If the contract work item for asphalt is paid by mass, the Department measures asphalt tonnes by complying with the specifications for mass determination of liquid asphalt in Section 93, "Liquid Asphalts."

The Engineer determines the asphalt mass from volumetric measurements if you:

1. Use a partial asphalt load.
2. Use asphalt at a location other than a mixing plant and no scales within 35 km are available and suitable.
3. Deliver asphalt in either of the following:
  - 3.1. A calibrated truck with each tank accompanied by its measuring stick and calibration card.
  - 3.2. A truck equipped with a calibrated thermometer that determines the asphalt temperature at the delivery time and with a vehicle tank meter complying with the specifications for weighing, measuring, and metering devices in Section 9-1.01, "Measurement of Quantities."

If you furnish hot mix asphalt from a mixing plant producing material for only one project, the Engineer determines the asphalt quantity by measuring the volume in the tank at the project's start and end provided the tank is calibrated and equipped with its measuring stick and calibration card.

The Engineer determines pay quantities from volumetric measurements as follows:

1. Before converting the volume to mass, the Engineer reduces the measured volume to that which the asphalt would occupy at 15°C.
2. The Engineer uses 981 L/tonne and 1020 g/L for the average mass and volume for PG and PG Polymer Modified asphalt grades at 15°C.
3. The Engineer uses the Conversion Table in Section 93, "Liquid Asphalts."

^^

**SECTION 93: LIQUID ASPHALTS  
(Issued 11-03-06)**

**In Section 93-1.04 replace the 9th paragraph with:**

The following Legend and Conversion Table is to be used for converting volumes of liquid asphalt products, Grades 70 to 3000, inclusive, and paving asphalt Grades PG 58-22, PG 64-10, PG 64-16, PG 64-28, and PG 70-10, and Grades PG 58-34 PM, PG 64-28 PM, and PG 76-22 PM.

^^

## **SECTION 95: EPOXY**

**(Issued 03-16-07)**

**Replace Section 95 with:**

## **SECTION 95: EPOXY**

### **95-1 GENERAL**

#### **95-1.01 DESCRIPTION**

These specifications are intended to specify epoxy that will meet service requirements for highway construction.

Epoxy shall be furnished as 2 components, which shall be mixed together at the site of the work.

#### **95-1.02 SAMPLING AND TESTING**

Epoxy shall not be used prior to sampling and testing unless its use is permitted prior to sampling and testing in conformance with the provisions in Section 6-1.07, "Certificates of Compliance."

Tests will be conducted in conformance with the latest test methods of the American Society for Testing and Materials, and California Test Methods in use by the Transportation Laboratory.

Epoxy components shall be formulated to maintain the specified properties for a minimum of one year. The Engineer may require additional testing of any epoxy component that has not been used within one year of manufacture.

#### **95-1.03 PACKAGING, LABELING AND STORING**

Each component shall be packaged in containers of size proportional to the amount of that component in the mix so that one container of each component is used in mixing one batch of epoxy. The containers shall be of such design that all of the contents may be readily removed and shall be well sealed to prevent leakage. The containers and labeling shall meet U.S. Department of Transportation Hazardous Material Shipping Regulations, and the containers shall be of a material, or lined with a material, of such character as to resist any action by the components. Each container shall be clearly labeled with the ASTM Designation: C881 Class and Type; designation (Component A or B); manufacturer's name; date of manufacture; batch number (a batch shall consist of a single charge of all components in a mixing chamber); all directions for use (as specified elsewhere) and such warning or precautions concerning the contents as may be required by State or Federal Laws and Regulations. The manufacturer of the finished epoxy components shall furnish a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," and a copy of the label for each material. The certificate shall include a list, by Title and Section, of the State and Federal packaging and labeling laws and regulations that the manufacturer has complied with.

Attention is directed to the characteristic of some epoxy components to crystallize or thicken excessively prior to use when stored at temperatures below 2°C. Any material which shows evidence of crystallization or a permanent increase in viscosity or settling of pigments which cannot be readily redispersed with a paddle shall not be used.

#### **95-1.04 DIRECTIONS FOR USE**

At the time of mixing, components A and B shall be at a temperature between 15°C and 30°C, unless otherwise specified. Any heating of the adhesive components shall be done by application of indirect heat. Immediately prior to mixing, each component shall be thoroughly mixed with a paddle. Separate paddles shall be used to stir each component. Immediately prior to use, the 2 components shall be thoroughly mixed together in the specified ratios. No solvent shall be added to any epoxy.

After mixing, epoxies shall be placed in the work and any overlaying or inserted material which is to be bonded to the work by the epoxy shall also be placed before thickening of the epoxy has begun. Surfaces upon which epoxy is to be placed shall be free of rust, paint, grease, asphalt, and loose and deleterious material. When epoxy is used as a binder to make epoxy concrete or mortar, the 2 components of epoxy shall be thoroughly mixed together before the aggregate is added and, unless otherwise specified, the mix proportions shall consist of one part of binder to approximately 4 parts of aggregate, by volume. Aggregate for use in epoxy concrete and mortar shall be clean and shall have a moisture content of not more than 0.50-percent when tested by California Test 226. Surfaces against which epoxy concrete and mortar are to be placed shall be primed with a coat of the epoxy used just prior to placing the concrete or mortar.

## 95-2 TYPES OF EPOXIES

### 95-2.01 BINDER (ADHESIVE), EPOXY RESIN BASE

#### Classification:

This specification covers a low viscosity epoxy formulated primarily for use in making high-strength epoxy concrete and epoxy mortar and in pressure grouting of cracks in concrete. For load bearing applications, use ASTM Designation: C 881, Type IV, Grade 1, Class B or C. Class B or C shall be used depending on the substrate and ambient temperatures. Use Grade B for atmospheric and surface temperatures as low as 4°C. Use Class C when temperatures are 15°C or higher. For non-load bearing applications use ASTM Designation: C881, Type I, Grade 1, Class B or C. Apply no thicker than recommended by the manufacturer. Thick sections of this epoxy are not suitable for use in freeze thaw environments. In a freeze-thaw environment, increase the aggregate loading to improve the properties of the epoxy concrete.

#### Directions for Use:

Mix in conformance with the manufacturer's written recommendations. No more material shall be mixed than can be used within the pot-life from the time mixing operations are started.

### 95-2.02 (BLANK)

### 95-2.03 EPOXY RESIN ADHESIVE FOR BONDING NEW CONCRETE TO OLD CONCRETE

#### Classification:

This specification covers a low viscosity paste epoxy formulated primarily for use in bonding new portland cement concrete to hardened portland cement concrete. The epoxy shall meet the specification requirements of ASTM Designation: C 881, Type V, Grade 2. This epoxy is available in 2 Classes: Class C for general use at temperature greater than 15°C and Class B for use when cure temperatures are below 15°C and above 4°C, or when a faster cure is required.

#### Directions for Use:

The mixing ratio and use shall be in conformance with the manufacturer's written recommendations. When measuring as individual Components A and B, stir and tap the measuring containers to remove possible air voids. The ingredients in Components A and B shall be thoroughly dispersed such that each component forms a uniform paste. Do not mix more material than can be spread within the pot life from the time mixing operations are started. The spreading rate shall be sufficient to thoroughly coat the surface. Spread the mixed adhesive by brush or roller over blast-cleaned concrete at a rate recommended by the manufacturer. The new concrete shall be placed against the adhesive coating on the old concrete before the adhesive has set. If the adhesive has set and is not tacky prior to placing the new concrete, a new coating of adhesive shall be applied.

### 95-2.04 RAPID SET EPOXY ADHESIVE FOR PAVEMENT MARKERS

#### Classification:

This specification covers a high viscosity paste, rapid set epoxy formulated primarily for use in bonding pavement markers to portland cement concrete and asphalt concrete. The adhesive shall meet ASTM Designation: C 881, Type IV, Grade 3, Class B and C except that the gel time may be shorter than 30 minutes. The adhesive shall conform to these requirements and the following.

#### Characteristics of Combined Components:

All tests shall be performed in conformance with the requirements in California Test 434.

Property	Requirement
Gel time, minutes, maximum, at 25°C	30
Bond Strength to Concrete, Time, minutes (maximum) to reach not less than 1.4 MPa	
at 25°C ±1°C	35
at 10°C ±1°C	45
Slant Shear Strength	
2 days at 25°C ±1°C, MPa	7
14 days at 25°C ±1°C, plus water soak, MPa	10.5
Tensile Adhesion and Cohesion	
Ceramic marker bottom, MPa	4.8 min.
Ceramic marker bottom, including post cure, MPa	4.8 min.
Retroreflective pavement marker bottom, MPa	3.4 min.
Color of mixed epoxy	gray
Glass transition temperature, Tg, samples conditioned at 25°C for 24 hours, ASTM Designation: D 4065	30°C min.

**Directions for Use:**

Components A and B shall be mixed in conformance with the manufacturer's written recommendations. When an automatic proportioning and mixing machine is used, the temperature of the components shall be maintained by indirect heating or cooling, so that the adhesive will meter, mix and extrude properly. The maximum temperature shall be such that after proper mixing no excess adhesive shall flow from under the marker other than that specified in Section 85-1.06, "Placement."

**95-2.05 STANDARD SET EPOXY ADHESIVE FOR PAVEMENT MARKERS**

**Classification:**

This specification covers a high viscosity paste standard set epoxy formulated primarily for use in bonding pavement markers to portland cement concrete and asphalt concrete. The epoxy shall meet ASTM Designation: C 881, Type IV, Viscosity Grade 3, Classes B or C, except that the gel time may be shorter than 30 minutes.

**Characteristics of Combined Components:**

All tests shall be performed in conformance with the requirements in California Test 434.



Property	Requirement
Gel time, minutes, maximum, at 25°C	30
Bond Strength to Concrete, Time (maximum) to reach not less than 1.4 MPa	
at 25°C ±1°C	3.5 hours
at 13°C ±1°C	24 hours
Slant Shear Strength	
2 days at 25°C ±1°C, MPa	7 min.
14 days at 25°C ±1°C, plus water soak, MPa	10.5 min.
Tensile Adhesion and Cohesion	
Ceramic marker bottom, MPa	4.8 min.
Ceramic marker bottom, including post cure, MPa	4.8 min.
Reflective pavement marker bottom, MPa	3.4 min.
Color of Mixed Components	gray
Glass transition temperature, Tg, samples conditioned at 25°C for 24 hours, ASTM Designation: D 4065	30°C min.

**Directions for Use:**

Components A and B shall be mixed in conformance with the manufacturer's written recommendations. When an automatic proportioning and mixing machine is used, the temperature of the components shall be maintained by indirect heating or cooling, so that the adhesive will meter, mix and extrude properly. The maximum temperature shall be such that after proper mixing no excess adhesive shall flow from under the marker other than that specified in Section 85-1.06, "Placement."

**95-2.06 (BLANK)**

**95-2.07 (BLANK)**

**95-2.08 (BLANK)**

**95-2.09 EPOXY SEALANT FOR INDUCTIVE LOOPS**

**Classification:**

This specification covers a high viscosity liquid epoxy formulated primarily for use in sealing inductive wire loops and leads imbedded in asphalt concrete and portland cement concrete for traffic signal controls and vehicle counters. This epoxy is to be used for repair work on existing spalls, cracks and other deformations in and around saw cuts housing inductor loops and leads. The rapid cure allows minimum traffic delay. This sealant is suitable for use in freeze-thaw areas. The epoxy shall meet ASTM Designation: C 881, Type I, Grade 2 and the following requirements.

**Characteristics of Combined Components:**

All tests shall be performed in conformance with the requirements in California Test 434.

Property	Requirement
Gel time, minutes, maximum	30
On 3-mm cast sheet, cured 18 hours at 25°C, + 5 hours at 70°C	
Tensile Strength, MPa	2.7 min.
Elongation, percent	90 min.
Shore D Hardness	45 min.

**Directions for Use:**

Saw cuts shall be cleaned with compressed air to remove all excess moisture and debris. For repairing damaged saw cuts, all loose spalled material shall be cleaned away from the saw cut, chipping back to sound asphalt concrete or portland cement concrete and all loose material cleaned from loop wires.

The mixing ratio shall be in conformance with the manufacturer's recommendations. No more material shall be mixed than can be used within the gel time from the time mixing operations are started.

When automatic mixing equipment is used for mixing the sealant, the provisions in the twelfth paragraph in Section 85-1.06, "Placement," shall apply.

**95-2.10 (BLANK)**

**95-2.11 EPOXY RESIN ADHESIVE FOR INJECTION GROUTING OF PORTLAND CEMENT CONCRETE PAVEMENTS**

**Directions for Use:**

Both components and the mixed material shall contain no solvents. The mixing ratio of the components in terms of volume and mass shall be clearly stated. The material shall be suitable for use in the mixing equipment used by the applicator. Epoxy adhesive samples shall be furnished to the Engineer for testing at least 12 days before the expected time of use.

**Characteristics of Adhesive:**

Test <sup>a</sup>	California Test	Requirement
Brookfield Viscosity, No. 3 Spindle at 20 rpm, Pa·s at 25°C	434, Part 4	0.9 max.
Gel time, minutes	434, Part 1	2 to 15
Slant Shear Strength on Dry Concrete, MPa, after 4 days of cure in air at 25°C ±1°C	434, Part 5 <sup>b</sup>	41.4 min.
Slant Shear Strength on Wet Concrete, MPa, after 4 days of cure in air at 25°C ±1°C	434, Part 5 <sup>b</sup>	21.1 min.
Tensile Strength, Mpa	434, Part 7, except test after 4 days of cure at 25°C ±1°C	31.0 min.
Elongation, %	434, Part 7, except test after 4 days of cure at 25°C ±1°C	10 max.

a The mixing ratio used will be that recommended by the manufacturer.

b For slant shear strength on concrete, delete Sections B-1 and B-5 of California Test 434, Part 5. For dry concrete, use Step "2" below only. For wet concrete, use both Steps "1" & "2":

1 Soak blocks in water for 24 hours at 25°C ±1°C. Remove and wipe off excess water.

2 Mix epoxy as described in California Test 434, Part 1, and apply a coat approximately 250 µm thick to each diagonal surface. Place four 3-mm square pieces of shim stock 305 µm thick on one block to control final film thickness. Before pressing the coated surfaces together, leave the blocks so that the coated surfaces are horizontal until the epoxy reacts slightly to prevent excessive flow.

**END OF AMENDMENTS**

**APPENDIX B - PERMITS**

**CALIFORNIA DEPARTMENT OF FISH AND GAME AGREEMENT REGARDING  
PROPOSED STREAM ALTERATION**

**APPENDIX B - PERMITS**

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD CLEAN  
WATER ACT 401 WATER QUALITY CERTIFICATION**

**APPENDIX B – PERMITS**

**US ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER 14**

**APPENDIX B – PERMITS**

**CALIFORNIA DEPARTMENT OF INDUSTRIAL REGULATIONS  
UNDERGROUND CLASSIFICATIONS**

**APPENDIX B – PERMITS**

**CALTRANS ENCROACHMENT PERMIT**

**AGREEMENT**

**County of El Dorado, State of California  
Department of Transportation**

**Contract No. 71336**

**US 50/MISSOURI FLAT ROAD  
INTERSECTION IMPROVEMENTS PHASE 1B**

**THIS AGREEMENT** ("Agreement") approved by the Board of Supervisors this \_\_\_<sup>st</sup> day of \_\_\_\_\_, in the year of 2009, made and concluded, in duplicate, between the COUNTY OF EL DORADO, a political subdivision of the State of California, by the Department of Transportation thereof, the party of the first part hereinafter called "County," and [contractor], party of the second part hereinafter called "Contractor."

**RECITALS:**

**WHEREAS**, County has caused the above-captioned project to be let to formal bidding process; and

**WHEREAS**, Contractor has duly submitted a bid response for the captioned project upon which County has awarded this Contract;

**NOW, THEREFORE**, the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree, each with the other, as follows:

**Article 1. THE WORK**

The improvement contemplated in the performance of this Contract is an improvement over which the County shall exercise general supervision. The County therefore, shall have the right, but not the duty, to assume full and direct control over this Contract whenever the County at its sole discretion, shall determine that its responsibility (to the United States) is so required.

The Contractor shall complete the Work as specified or indicated under the Bid Schedule(s) of the County's Contract Documents entitled:

**US 50/MISSOURI FLAT ROAD  
INTERSECTION IMPROVEMENTS PHASE 1B**

The project is located in El Dorado County near Placerville, California. The Work to be done is shown on the Plans, described in the Special Provisions and generally consists of, but is not limited to:

Widening of Route 50 and the Weber Creek Bridge and reconstruction of Route 50 on and off ramps, roadway improvements, retaining walls, bicycle and pedestrian facilities, traffic signal improvements, including stage construction to facilitate grading, clearing and grubbing, permanent and temporary fence removal and construction, drainage removal and construction, concrete drainage boxes and inlets, grade ditch, excavation, rock base, asphalt paving, signing and striping, pavement obliteration, permanent and temporary erosion control. Other items or details not mentioned above, that are required by the Plans, Standard Specifications, or these Special Provisions, shall be performed, constructed or installed.

**Article 2. CONTRACT DOCUMENTS**

The Contract Documents consist of: the Notice to Bidders; the bid forms which include the accepted Proposal, Bid Price Schedule and Total Bid, Subcontractors Listing, UDBE Information, Equal Employment Opportunity Certification, Section 10285.1 Statement, Section 10162 Questionnaire, Section 10232 Statement, Noncollusion

US 50/Missouri Flat Road Interchange Improvements Phase 1B  
**Contract No. 71336**  
September 15, 2009

County of El Dorado DOT  
**Agreement**  
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Affidavit, Reliable Contractor Declaration, Debarment and Suspension Certification, Non-lobbying Certification for Federal-Aid Contracts, Disclosure of Lobbying Activities (Standard Form LLL), Form FHWA 1273; the Contract which includes this Agreement with all Exhibits thereto, the Performance Bond, and Payment Bond, the LOCAL AGENCY BIDDER – DBE INFORMATION form; the drawings listed and identified as the Project Plans; the Special Provisions which incorporate by reference the Caltrans Standard Plans, dated July 2004, and Standard Specifications, dated July 1999, Amendments to the July 1999 Standard Specifications, and standard drawings from the Design and Improvement Standards Manual of the County of El Dorado, revised March 8, 1994 including Resolution 199-91 and Resolution 58-94 to adopt changes to the Design and Improvement Standards Manual; all Addenda incorporated in those documents before their execution, and all Contract Change Orders issued in accordance with the Contract Documents which may be delivered or issued after the Effective Date of this Agreement and are not attached hereto; the prevailing Labor Surcharge And Equipment Rental Rates (when required) as determined by the Department of Industrial Relations to be in effect on the date the Work is accomplished; all the obligations of County and of Contractor which are fully set forth and described therein; and all Contract Documents which are hereby specifically referred to and by such reference made a part hereof. All Contract Documents are intended to cooperate so that any work called for in one and not mentioned in the other is to be executed the same as if mentioned in all Contract Documents. Contractor agrees to perform all of its promises, covenants, and conditions set forth in the Contract Documents, and to abide by and perform all terms and conditions set forth therein. In case of conflict between this Agreement and any other contract document, this Agreement shall take precedence.

### **Article 3. COVENANTS AND CONTRACT PRICE**

County hereby promises and agrees with said Contractor to employ, and does hereby employ, said Contractor to provide the material and to do the Work according to the terms and conditions of the Contract Documents herein contained and referred to, for the prices hereinafter set forth, and hereby contracts to pay the same at the time, in the manner and upon the conditions herein set forth; and the said parties for themselves, their heirs, executors, administrators, successors and assigns, do hereby agree to the full performance of the covenants herein contained. County shall pay Contractor for the completion of the Work in accordance with the Contract Documents in current funds the Contract Prices named in Contractor's Bid and Bid Price Schedule, a copy of which is attached hereto as Exhibit A.

### **Article 4. COMMENCEMENT AND COMPLETION**

The Work to be performed under this Contract shall commence on the date specified in the Notice to Proceed issued by County, and the Work shall be fully completed within the time specified in the Notice to Proceed pursuant to Section 4 of the Special Provisions.

County and Contractor recognize that time is of the essence of the Agreement and that County will suffer financial loss if the Work is not completed within the time specified in Section 4 of the Special Provisions annexed hereto, plus any extensions thereof allowed in accordance with Section 4 of the Special Provisions. They also recognize the delays, expense, and difficulties involved with proving in a legal proceeding the actual loss suffered by County if the Work is not completed on time. Accordingly, instead of requiring any such proof, County and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay County the sum of **Nine Thousand Three Hundred dollars (\$9,300.00) per day**, as liquidated damages and not as a penalty, for each and every calendar day's delay in finishing the Work in excess of the contract time prescribed herein.

### **Article 5. INDEMNITY**

To the fullest extent allowed by law, Contractor shall defend, indemnify, and hold the County and the State of California and its (their) officers, directors, and employees, and any federal government agencies associated with this Contract, and any property owners from whom the County has obtained construction easements harmless against and from any and all claims, suits, losses, damages, and liability for damages, including attorney's fees and other costs of defense brought for or on account of injuries to or death of any person, including but not limited to, workers and the public, or on account of injuries to or death of County or State or federal government agency employees, or any property owners from whom the County has obtained construction easements or damage to property, or any economic, consequential or special damages which are claimed or which shall in any way arise out of or be connected with Contractor's services, operations or performance hereunder, regardless of the existence or degree of fault or negligence on the part of the County, the State of California, or any federal government agencies, any property owners from whom the County has obtained a construction easements, the Contractor, subcontractors

or employees of any of these, except for the active, or sole negligence of the County, the State of California, or any federal government agencies its (their) officers and employees, or any property owners from whom the County has obtained a construction easement, or where expressly prescribed by statute.

The duty to indemnify and hold harmless the County, the State and any federal government agencies associated with this Contract specifically includes the duties to defend set forth in Section 2778 of the Civil Code. The insurance obligations of Contractor are separate, independent obligations under the Contract Documents, and the provisions of this defense and indemnity are not intended to modify nor should they be construed as modifying or in any way limiting the insurance obligations set forth in the Contract Documents.

#### **Article 6. GUARANTEES**

Contractor shall repair or replace any or all work provided hereunder which is defective due to faulty materials, poor workmanship, or defective equipment at no expense to County, ordinary wear or tear and unusual abuse or neglect excepted, during the term of the Contract and for a period of one (1) year after Contract Acceptance.

Contractor shall be required to repair or replace any and all adjacent facilities or areas which have been damaged or displaced due to Contractor's work performed under this Agreement at no expense to County during the term of this Agreement and for a period of one (1) year after Contract Acceptance.

If a warranty or guarantee exceeding one (1) year is provided by the supplier or manufacturer of any equipment or materials used in this Project, or if a warranty or guarantee exceeding one (1) year is required elsewhere in these Contract Documents, then the guarantee for such equipment or materials shall be extended for such term. Contractor expressly agrees to act as co-guarantor of such equipment and materials, and Contractor shall supply County with all warranty and guaranty documents relative to equipment and materials incorporated in the job and guaranteed by its suppliers or manufacturers.

The parties agree that this guarantee and the rights and obligations accruing therefrom shall be in addition to, and not by way of limitation in any manner whatsoever to, the rights, obligations, warranties or remedies otherwise provided for by law.

In the event of Contractor's failure to comply with the above mentioned conditions within ten (10) calendar days after being notified in writing by County, Contractor hereby authorizes County to proceed to have said defects repaired and made good at Contractor's expense, and Contractor will honor and pay all costs and charges therefore upon written demand.

#### **Article 7. VENUE**

Any litigation arising out of this Contract shall be brought in El Dorado County and governed by California law.

#### **Article 8. ASSIGNMENT OF ANTITRUST ACTIONS**

In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor offers and agrees and will require all of its subcontractors and suppliers to agree to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to Contractor, without further acknowledgment by the parties.

If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Government Code Sections 4550-4554, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery. Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under Government Code Sections 4550-4554 if the assignor has been or may have been injured

by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action.

#### **Article 9. TERMINATION BY COUNTY FOR CONVENIENCE**

County reserves the right to terminate the Contract at any time upon determination by County's representative that termination of the Contract is in the best interest of County. County shall issue Contractor a written notice specifying that the Contract is to be terminated.

Upon receipt of said written notice, Contractor shall stop all work under the Contract except: (1) work specifically directed to be completed prior to termination, (2) work the Inspector deems necessary to secure the project for termination, (3) removal of equipment and plant from the site of the Work, (4) action that is necessary to protect materials from damage, (5) disposal of materials not yet used in the Work as directed by County, and (6) clean up of the site.

If the Contract is terminated for County's convenience as provided herein, all finished or unfinished work and materials previously paid for shall, at the option of County, become its property. Contractor shall be paid an amount which reflects costs incurred for work provided to the date of notification of termination. In addition, Contractor shall be paid the reasonable cost, as solely judged by County, and without profit, for all work performed to secure the project for termination.

#### **Article 10. TERMINATION BY COUNTY FOR CAUSE**

If Contractor is adjudged as bankrupt or insolvent, or makes a general assignment for the benefit of its creditors or if a trustee or receiver is appointed for Contractor or for any of its property, or if Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or on more than one occasion fails to supply sufficient skilled workmen or suitable material or equipment, or on more than one occasion fails to make prompt payments to subcontractors for labor, materials, or equipment, or disregards the authority of the County's representative, or the Engineer, if one is appointed, or violates any of the Contract assurances, nondiscrimination provisions or any other federal or state requirements as identified in Section 2-1.06 of the Special Provisions, or otherwise violates any provision of the Contract Documents, then County may, without prejudice to any other right or remedy and after giving Contractor and its Surety a minimum of ten (10) days from delivery of a written termination notice, terminate the services of Contractor and take equipment and machinery thereon owned by Contractor and finish the Work by whatever method County may deem expedient. In such case, Contractor shall not be entitled to receive any further payment until the Work is finished.

Without prejudice to other rights or remedies County may have, if Contractor fails to begin delivery of materials and equipment, to commence Work within the time specified, to maintain the rate of delivery of material, to execute the Work in the manner and at such locations as specified, or fails to maintain a work program which will ensure County's interest, or, if Contractor is not carrying out the intent of the Contract, an Inspector's written notice may be served upon Contractor and the Surety on its faithful performance bond demanding satisfactory compliance with the Contract. If Contractor or its Surety does not comply with such notice within five (5) days after receiving it, or after starting to comply, fails to continue, County may exclude it from the premises and take possession of all material and equipment, and complete the Work by County's own forces, by letting the unfinished Work to another Contractor, or by a combination of such methods.

Where Contractor's services have been so terminated by County, said termination shall not affect any right of County against Contractor then existing or which may thereafter accrue. Any retention or payment of monies by County due Contractor will not release Contractor from compliance with the Contract Documents.

If the unpaid balance of the Contract price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to Contractor. If the sums under the Contract are insufficient for completion, Contractor or Surety shall pay to County within five (5) days after the completion, all costs in excess of the Contract price. In any event, the cost of completing the Work shall be charged against Contractor and its Surety and may be deducted from any money due or becoming due from County.

If the Surety assumes any part of the Work, it shall take Contractor's place in all respects for that part and shall be paid by County for all Work performed by it in accordance with the Contract. If the Surety assumes the entire

Contract, all money due Contractor at the time of its default shall be payable to the Surety as the work progresses, subject to the terms of this Contract.

In addition to the forgoing, if the Contractor is placed on the State of California Integrated Waste Management Board's Unreliable Contractor List after award of the Contract, County may terminate this agreement.

The provisions of this Article shall be in addition to all other rights and remedies available to County under law.

If after notice of termination, it is determined for any reason that Contractor was not in default, the rights and obligations of the parties shall be the same as if the notice of termination had not been issued. The Contract shall be equitably adjusted to compensate for such termination.

**Article 11. WORKERS' COMPENSATION CERTIFICATION**

Contractor shall comply with Labor Code Sections 3700 et seq., requiring it to obtain Workers' Compensation Insurance, and sign a certificate of knowledge thereof.

**CERTIFICATE OF KNOWLEDGE - LABOR CODE SECTION 3700**

I am aware of the provisions of Section 3700 of the Labor Code, which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that Code, and I will comply with such provisions before commencing the performance of work of this Contract.

Signed: \_\_\_\_\_ Date \_\_\_\_\_

**Article 12. WARRANTY**

Contractor warrants to County that materials and equipment furnished for the Work will be of good quality and new, unless otherwise required or permitted under the Contract Documents, that the Work will be free from defects or flaws and is of the highest quality of workmanship and that the Work will conform with the requirements herein. Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective.

**Article 13. RETAINAGE**

The retainage from payment is set forth in Section "PAYMENT OF WITHHELD FUNDS" of the Special Provisions. Contractor may elect to receive one hundred percent (100%) of payments due as set forth in the Contract Documents, without retention, by depositing securities of equivalent value with County, in accordance with, and as set forth in Section 22300 of the Public Contract Code. Securities eligible for deposit hereunder shall be limited to those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.

**Article 14. DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM**

Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy, as County deems appropriate. Contractor shall include this assurance in every subcontract entered into as a result of this Agreement.

**Article 15. PROMPT PAYMENT OF SUBCONTRACTORS**

Prompt Progress Payment to Subcontractors

A prime Contractor or subcontractor shall pay to any subcontractor not later than ten (10) days of receipt of each progress payment, in accordance with the provision in Section 7108.5 of the California Business and Professions Code concerning prompt payment to subcontractors. The ten day period is applicable unless a longer period is agreed to in writing. Any delay or postponement of payment over thirty (30) days may take place only for good cause and with County's prior written approval. Any violation of Section 7108.5 shall subject the violating contractor or subcontractor to the penalties, sanctions and other remedies of that Section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor, deficient subcontractor performance, and/or noncompliance by a subcontractor.

Prompt Payment of Withheld Funds to Subcontractors

County shall hold retainage from the prime Contractor and shall make prompt and regular incremental acceptances of portions, as determined by the Department of the contract work and pay retainage to the prime Contractor based on these acceptances. The prime Contractor or subcontractor shall return all monies withheld in retention from the subcontractor within thirty (30) days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work by County. Federal law (49CFR26.29) requires that any delay or postponement of payment may take place only for good cause and with County's prior written approval. Any violation of these provisions shall subject the violating Contractor or subcontractor to the penalties, sanctions, and remedies specified in Section 7108.5 of the California Business and Professions Code. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to Contractor or subcontractor in the event of a dispute involving late payment or nonpayment by Contractor, deficient subcontractor performance, and/or noncompliance by a subcontractor.

**Article 16. PREVAILING WAGE REQUIREMENTS**

In accordance with the provisions of California Labor Code Sections 1770 et seq., including but not limited to Sections 1773, 1773.1, 1773.2, 1773.6, and 1773.7, the general prevailing rate of wages in the county in which the Work is to be done has been determined by the Director of the California Department of Industrial Relations. These wage rates appear in the California Department of Transportation publication entitled General Prevailing Wage Rates.

Interested parties can obtain the current wage information by submitting requests to the Department of Industrial Relations, Division of Labor Statistics and Research, PO Box 420603, San Francisco CA 94142-0603, Telephone (415) 703-4708 or by referring to the website at <http://www.dir.ca.gov/dlsr/PWD>. The rates at the time of the bid advertisement date of a project will remain in effect for the life of the project in accordance with the California Code of Regulations, as modified and effective January 27, 1997.

Copies of the general prevailing rate of wages in the County in which the Work is to be done are also on file at the Department of Transportation's principal office, and are available upon request, and in case of projects involving federal funds, federal wage requirements have been included in the Contract Documents.

In accordance with the provisions of Labor Code Section 1810, eight (8) hours of labor shall constitute a legal day's work upon all work done hereunder, and Contractor and any subcontractor employed under this Contract shall also conform to and be bound by the provisions of Labor Code Sections 1810 through 1815.

In the case of federally funded projects, where federal and state prevailing wage requirements apply, compliance with both is required. This project is funded in whole or part by federal funds. Contractor's attention is directed to Section 14 of the Special Provisions and the requirements of, and compliance with the Copeland Act (18 U.S.C. 874 and 29 CFR Part 3), the Davis-Bacon Act (40 U.S.C. 276a to 276a-7 and 29 CFR Part 5), and the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330 and 29 CFR Part 5).

If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, Contractor and subcontractors shall pay not less than the higher wage rate. The Department will not accept lower State wage rates not specifically included in the Federal minimum wage determinations. This includes "helper" (or other classifications based on hours of experience) or any other classification not appearing in the Federal wage determinations. Where Federal wage determinations do not contain the State wage rate determination otherwise available for use by Contractor and subcontractors, Contractor and subcontractors shall pay not less than the federal minimum wage rate which most closely approximates the duties of the employees in question.

## Article 17. NONDISCRIMINATION

- A. In connection with its performance under this Contract, Contractor shall comply with all applicable nondiscrimination statutes and regulations during the performance of this Contract including, but not limited to the following: Contractor, its employees, subcontractors and representatives shall not unlawfully discriminate against any employee or applicant for employment because of race, color, sex, sexual orientation, religion, ancestry or national origin, physical disability, medical condition, marital status, political affiliation, family and medical care leave, pregnancy leave or disability leave. Contractor will take affirmative action to ensure that employees are treated during employment, without regard to their race, color, sex, sexual orientation, religion, ancestry or national origin, physical disability, medical condition, marital status, political affiliation, family and medical care leave, pregnancy leave or disability leave. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor shall post in conspicuous places, available to employees for employment, notices to be provided by State setting forth the provisions of this Fair Employment section. Contractor shall, unless exempt, comply with the applicable provisions of the Fair Employment and Housing Act (Government Code, Sections 12900 et seq.) and applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Sections 7285.0 et seq.); the applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12990, set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations incorporated into this Agreement by reference and made a part hereof as if set forth in full; and Title VI of the Civil Rights Act of 1964, as amended. Contractor, its employees, subcontractors and representatives shall give written notice of their obligations under this clause as required by law.
- B. Where applicable, Contractor shall include these nondiscrimination and compliance provisions in any of its subcontracts that affect or are related to the Work performed herein.
- C. The Congress of the United States, the Legislature of the State of California and the Governor of the State of California, each within their respective jurisdictions, have prescribed certain nondiscrimination requirements with respect to contract and other work financed with public funds. Contractor agrees to comply with the requirements of Exhibit B, marked "Fair Employment Practices Addendum" and the requirements of Exhibit C, marked "Nondiscrimination Assurances," including Appendices A through D to Exhibit C, both of which exhibits and all of the Appendices to Exhibit C are incorporated herein and made by reference a part hereof. Contractor further agrees that any agreement entered into by Contractor with a third party for the performance of project-related work shall incorporate Exhibits B and C and Appendices A through D to Exhibit C (with third party's name replacing Contractor) as essential parts of such agreement to be enforced by that third party as verified by Contractor.
- D. Contractor's signature executing this Contract shall provide any certifications necessary under the federal laws and the laws of the State of California, including but not limited to Government Code Section 12990 and Title 2, California Code of Regulations, Section 8103.

## Article 18. CONTRACTOR ASSURANCES

By executing this Contract, Contractor certifies that it:

- a. Will abide by all administrative, contractual or legal remedies in instances where Contractor violates or breaches contract terms, and will comply with sanctions and penalties as the Contract Administrator deems appropriate.
- b. Will comply with the termination for cause and termination for convenience provisions of the Contract including the manner by which such termination may be effected and the basis for settlement afforded by those provisions.
- c. Will comply with Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR Chapter 60).

- d. Will comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3).
- e. Will comply with the Davis-Bacon Act (40 U.S.C. 276a to 276a-7) as supplemented in Department of Labor regulations (29 CFR part 3).
- f. Will comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by Department of Labor regulations (29 CFR Part 5).
- g. Will comply with County, State of California and FHWA requirements and regulations pertaining to: (a) reporting; (b) patent rights with respect to any discovery or invention which arises or is developed in the course of or under this Contract; and (c) copyrights and rights in data.
- h. Will comply with all applicable standards, orders or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1857 [h]), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15).
- i. Will comply with mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. : 94-163, 89 Stat. 871).
- j. Will comply with: (i) Section 504 of the Rehabilitation Act of 1973 (Rehabilitation Act) which prohibits discrimination on the basis of disability in federally assisted programs; (ii) the Americans with Disabilities Act (ADA) of 1990 which prohibits discrimination on the basis of disability irrespective of funding; and (iii) all applicable regulations and guidelines issued pursuant to both the Rehabilitation Act and the ADA.

Any subcontract entered into as a result of this Contract shall contain all of the provisions of this Article.

**Article 19. BUSINESS LICENSE**

The County Business License Ordinance provides that it is unlawful for any person to furnish supplies or services, or transact any kind of business in the unincorporated territory of El Dorado County without possessing a County business license unless exempt under County Ordinance Code Section 5.08.070. Contractor warrants and represents that it shall comply with all of the requirements of the County Business License Ordinance, where applicable, prior to beginning work under this Contract and at all times during the term of this Contract.

**Article 20. CONTRACT ADMINISTRATOR**

The County Officer or employee with responsibility for administering this Agreement is John Kahling, Supervising Civil Engineer, Department of Transportation, or successor.

**Article 21. AUTHORIZED SIGNATURES**

The parties hereto represent that the undersigned individuals executing this Agreement on behalf of their respective parties are fully authorized to do so by law or other appropriate instrument and to bind upon said parties the obligations set forth herein.

IN WITNESS WHEREOF, the said Department of Transportation of the County of El Dorado, State of California, has caused this Agreement to be executed by County's Board of Supervisors, on its behalf, and the said Contractor has signed this Agreement the day and year written below.

**COUNTY OF EL DORADO**

Dated \_\_\_\_\_

\_\_\_\_\_  
Chairman, Board of Supervisors  
Attest:  
Suzanne Allen de Sanchez,  
Clerk of the Boars of Supervisors

Dated \_\_\_\_\_

\_\_\_\_\_  
Deputy Clerk

**CONTRACTOR**

Dated \_\_\_\_\_

By \_\_\_\_\_  
President

\_\_\_\_\_  
License No.

\_\_\_\_\_  
Federal Employer Identification Number

By \_\_\_\_\_  
Corporate Secretary

NOTE: If Contractor is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if Contractor is a co-partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts on behalf of the co-partnership; and if Contractor is an individual, his/her signature shall be placed above. Contractor executing this document on behalf of a corporation or partnership shall be prepared to demonstrate by resolution, article, or otherwise that it is appropriately authorized to act in these regards. For such corporation or partnership, such authority shall be demonstrated to the satisfaction of County. If signature is by an agent, other than officer of a corporation or a member of a partnership, an appropriate Power of Attorney shall be on file with the Department prior to signing this document.

Mailing Address: \_\_\_\_\_

Business Address: \_\_\_\_\_

City, Zip: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

**END OF AGREEMENT**



**EXHIBIT A**

**CONTRACTOR'S BID AND BID PRICE SCHEDULE  
(ENGINEER'S ESTIMATE)**

**US 50/MISSOURI FLAT ROAD  
INTERCHANGE IMPROVEMENTS PHASE 1B**

**CONTRACT NO. 71336**

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
1	070012	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	LUMP SUM		
2	071322	TEMPORARY FENCE (TYPE CL-1.8)	M	640		
3	071325	TEMPORARY FENCE (TYPE ESA)	M	2505		
4	072010	TRENCH AND EXCAVATION SAFETY	LS	LUMP SUM		
5	074014	FURNISH FIELD OFFICE	LS	LUMP SUM		
6	074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	LUMP SUM		
7	074028	TEMPORARY FIBER ROLL	M	18200		
8	074032	TEMPORARY CONCRETE WASHOUT FACILITY	EA	2		
9	074033	TEMPORARY CONSTRUCTION ENTRANCE	EA	6		
10	074035	TEMPORARY CHECK DAM	EA	300		
11	074045	TEMPORARY CREEK DIVERSION	LS	LUMP SUM		
12	074046	CONSTRUCT PARCEL #1	LS	LUMP SUM		
13	074047	CONSTRUCT PARCEL #2	LS	LUMP SUM		
14	074048	CONSTRUCT PARCEL #3	LS	LUMP SUM		
15	(F) 074049	RESTORATION PARCEL #2	M2	2220		
16	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM		

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
17	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM		
18	120116	TYPE II BARRICADE	EA	18		
19	120149	TEMPORARY PAVEMENT MARKING (PAINT)	M2	140		
20	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	M	19400		
21	120165	CHANNELIZER (SURFACE MOUNTED)	EA	160		
22	120300	TEMPORARY PAVEMENT MARKER	EA	1180		
23	128650	PORTABLE CHANGEABLE MESSAGE SIGN	SWD	1980		
24	129000	TEMPORARY RAILING (TYPE K)	M	5660		
25	129100	TEMPORARY CRASH CUSHION MODULE	EA	134		
26	129150	TEMPORARY TRAFFIC SCREEN	M	5660		
27	150206	ABANDON CULVERT	M	170		
28	150605	REMOVE FENCE	M	1640		
29	150662	REMOVE METAL BEAM GUARD RAILING	M	270		
30	150668	REMOVE FLARED END SECTION	EA	5		
31	150710	REMOVE TRAFFIC STRIPE	M	5065		
32	150713	REMOVE PAVEMENT MARKING	M2	19		
33	150742	REMOVE ROADSIDE SIGN	EA	53		
34	150772	REMOVE CURB	M	310		
35	150806	REMOVE PIPE	M	300		
36	150819	REMOVE UTILITY VAULT	EA	2		

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
37	150820	REMOVE INLET	EA	13		
38	150823	REMOVE DOWNDRAIN	EA	1		
39	150857	REMOVE ASPHALT CONCRETE SURFACING	M2	3712		
40	150859	REMOVE ASPHALT CONCRETE OVERSIDE DRAIN	EA	4		
41	150860	REMOVE BASE AND SURFACING	M3	2770		
42	152390	RELOCATE ROADSIDE SIGN	EA	13		
43	152430	ADJUST INLET	EA	5		
44	152668	525 MM PLASTIC PIPE-LINER	M	63		
45	153103	COLD PLANE ASPHALT CONCRETE PAVEMENT	M2	30500		
46	153216	REMOVE CONCRETE CURB AND SIDEWALK	M	79		
47	153221	REMOVE CONCRETE BARRIER	M	190		
48	153222	REMOVE CONCRETE ISLAND (PORTIONS)	M2	730		
49	153225	PREPARE CONCRETE BRIDGE DECK SURFACE	M2	5750		
50	157560	BRIDGE REMOVAL (PORTION)	LS	LUMP SUM		
51	160101	CLEARING AND GRUBBING	LS	LUMP SUM		
52	(F) 190101	ROADWAY EXCAVATION	M3	96010		
53	190113	ASBESTOS COMPLIANCE PLAN	LS	LUMP SUM		
54	190118	ASBESTOS CONTAINING MATERIAL REMOVAL	LS	LUMP SUM		
55	190119	PREPARE FUGITIVE DUST PLAN	LS	LUMP SUM		
56	(F) 192003	STRUCTURE EXCAVATION (BRIDGE)	M3	1861		

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
57	(F)	192004	STRUCTURE EXCAVATION LOW EXPANSION MATERIAL	M3	679	
58	(F)	192005	STRUCTURE EXCAVATION (TYPE P4R)	M3	343	
59	(F)	192031	STRUCTURE EXCAVATION (PIER COLUMN)	M3	562	
60	(F)	192037	STRUCTURE EXCAVATION (RETAINING WALL)	M3	9018	
61	(F)	193003	STRUCTURE BACKFILL (BRIDGE)	M3	1069	
62	(F)	193005	STRUCTURE BACKFILL (TYPE P4R)	M3	221	
63	(F)	193013	STRUCTURE BACKFILL (RETAINING WALL)	M3	10483	
64		193114	SAND BACKFILL	M3	30	
65	(F)	198001	IMPORTED BORROW	M3	71300	
66		203016	EROSION CONTROL (TYPE D)	M2	59500	
67		203026	MOVE-IN/MOVE-OUT (EROSION CONTROL)	EA	6	
68		208729	150 MM CORRUGATED HIGH DENSITY POLYETHYLENE PIPE CONDUIT	M	62	
69		208759	50 MM CORRUGATED HIGH DENSITY POLYETHYLENE PIPE CONDUIT	M	62	
70		260201	CLASS 2 AGGREGATE BASE	M3	22999	
71		377501	SLURRY SEAL	TONNE	7	
72		390132	HOT MIX ASPHALT (TYPE A)	TONNE	15100	
73		390138	RUBBERIZED HOT MIX ASPHALT (OPEN GRADED)	TONNE	3600	
74		394074	PLACE HOT MIX ASPHALT DIKE (TYPE C)	M	50	
75		394076	PLACE HOT MIX ASPHALT DIKE (TYPE E)	M	950	
76		394077	PLACE HOT MIX ASPHALT DIKE (TYPE F)	M	910	

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
77		394090 PLACE HOT MIX ASPHALT (MISCELLANEOUS AREA)	M2	50		
78	(P)	500060 ROCK TIEDOWN ANCHOR	EA	20		
79	(F)	510051 STRUCTURAL CONCRETE, BRIDGE FOOTING	M3	390		
80	(F)	510052 STRUCTURAL CONCRETE, HIGH EARLY STRENGTH	M3	24		
81	(F)	510053 STRUCTURAL CONCRETE, BRIDGE	M3	2890		
82	(F)	510060 STRUCTURAL CONCRETE, RETAINING WALL	M3	3179		
83	(F)	510065 STRUCTURAL CONCRETE, PIER COLUMN	M3	466		
84	(F)	510086 STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	M3	137		
85	(F)	510087 STRUCTURAL CONCRETE, APPROACH SLAB (TYPE R)	M3	104		
86	(F)	510314 CLASS 4 CONCRETE (BACKFILL)	M3	117		
87	(F)	510502 MINOR CONCRETE (MINOR STRUCTURE)	M3	86		
88	(F)	511035 ARCHITECTURAL TREATMENT	M2	1085		
89		511106 DRILL AND BOND DOWEL	M	933		
90	(F)	515041 FURNISH POLYESTER CONCRETE OVERLAY	M3	142		
91	(F)	515042 PLACE POLYESTER CONCRETE OVERLAY	M2	5680		
92		515073 CORE CONCRETE (51 MM - 100 MM)	M	74		
93		518042 REPLACE BEARING	EA	64		
94	(P)	519122 JOINT SEAL (TYPE B - MR 40 MM)	M	183		
95	(F-P)	520102 BAR REINFORCING STEEL (BRIDGE)	KG	533780		
96	(F-P)	520103 BAR REINFORCING STEEL (RETAINING WALL)	KG	304870		

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
97	(F)	550203 FURNISH STRUCTURAL STEEL (BRIDGE)	KG	655750		
98	(F)	550204 ERECT STRUCTURAL STEEL (BRIDGE)	KG	655750		
99	(P)	560218 FURNISH SIGN STRUCTURE (TRUSS)	KG	11300		
100	(F)	560219 INSTALL SIGN STRUCTURE (TRUSS)	KG	11300		
101		560238 FURNISH SINGLE SHEET ALUMINUM SIGN (1.6 MM-UNFRAMED)	M2	33		
102		560239 FURNISH SINGLE SHEET ALUMINUM SIGN (2.0 MM-UNFRAMED)	M2	27		
103		560241 FURNISH SINGLE SHEET ALUMINUM SIGN (1.6 MM-FRAMED)	M2	2		
104		560242 FURNISH SINGLE SHEET ALUMINUM SIGN (2.0 MM-FRAMED)	M2	7		
105		561015 1524 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	28		
106		562002 METAL (BARRIER MOUNTED SIGN)	KG	710		
107		566011 ROADSIDE SIGN - ONE POST	EA	50		
108		566012 ROADSIDE SIGN - TWO POST	EA	7		
109		566013 ROADSIDE SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	15		
110		568016 INSTALL SIGN PANEL ON EXISTING FRAME	M2	11		
111		590115 CLEAN AND PAINT STRUCTURAL STEEL	LS	LUMP SUM		
112		590135 SPOT BLAST CLEAN AND PAINT UNDERCOAT	M2	42		
113		590301 WORK AREA MONITORING	LS	LUMP SUM		
114	(F)	597600 PREPARE AND PAINT CONCRETE	M2	1085		
115	(P)	650067 300 MM REINFORCED CONCRETE PIPE	M	23		
116	(P)	650069 450 MM REINFORCED CONCRETE PIPE	M	270		

ITEM NO.		ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
117	(P)	650075	600 MM REINFORCED CONCRETE PIPE	M	170		
118	(P)	650077	750 MM REINFORCED CONCRETE PIPE	M	230		
119	(P)	650079	900 MM REINFORCED CONCRETE PIPE	M	590		
120	(P)	664015	450 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	24		
121	(P)	664033	900 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	20		
122		680931	150 MM PERFORATED PLASTIC PIPE UNDERDRAIN	M	120		
123	(P)	705044	450 MM STEEL FLARED END SECTION	EA	1		
124	(P)	705048	900 MM STEEL FLARED END SECTION	EA	1		
125	(P)	705220	300 MM CONCRETE FLARED END SECTION	EA	2		
126	(P)	705224	600 MM CONCRETE FLARED END SECTION	EA	3		
127	(P)	705223	750 MM CONCRETE FLARED END SECTION	EA	2		
128	(P)	705227	900 MM CONCRETE FLARED END SECTION	EA	3		
129	(P)	707133	900 MM PRECAST CONCRETE PIPE INLET	M	12		
130		721010	ROCK SLOPE PROTECTION (BACKING NO. 1, METHOD B)	M3	1140		
131		727901	MINOR CONCRETE (DITCH LINING)	M3	61		
132	(P)	729010	ROCK SLOPE PROTECTION FABRIC	M2	3120		
133		731510	MINOR CONCRETE (CURB, GUTTER, SIDEWALK AND DRIVEWAY)	M3	53		
134		731511	MINOR CONCRETE (ISLAND PAVING)	M3	76		
135		731517	MINOR CONCRETE (GUTTER)	M3	26		
136		731530	MINOR CONCRETE (TEXTURED PAVING)	M3	120		

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
137	(P)	750001 MISCELLANEOUS IRON AND STEEL	KG	5640		
138	(F-P)	750501 MISCELLANEOUS METAL (BRIDGE)	KG	16805		
139	(F-P)	750504 MISCELLANEOUS METAL (CATWALK)	KG	21100		
140	(F-P)	750505 BRIDGE DECK DRAINAGE SYSTEM	KG	1790		
141	(P)	800391 CHAIN LINK FENCE (TYPE CL-1.8)	M	2410		
142		820106 CONCRETE BARRIER DELINEATOR (400 MM) TYPE F	EA	6		
143		820107 DELINEATOR (CLASS 1)	EA	40		
144		820110 HIGHWAY POST MARKER	EA	1		
145		820125 REMOVABLE BOLLARD	EA	2		
146		820130 OBJECT MARKER	EA	7		
147		832003 METAL BEAM GUARD RAILING (WOOD POST)	M	1670		
148		832070 VEGETATION CONTROL (MINOR CONCRETE)	M2	570		
149	(F-P)	833036 ACCESS BARRIER	EA	4		
150	(F-P)	833089 TUBULAR BICYCLE RAILING	M	234		
151	(F)	833142 CONCRETE BARRIER (TYPE 26 MODIFIED)	M	234		
152		839514 HANDRAILING	M	15		
153	(F-P)	839521 CABLE RAILING	M	332		
154	(P)	839541 TRANSITION RAILING (TYPE WB)	EA	3		
155	(P)	839581 END ANCHOR ASSEMBLY (TYPE SFT)	EA	6		
156	(P)	839584 ALTERNATIVE IN-LINE TERMINAL SYSTEM	EA	2		



ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
157	(P) 839585	ALTERNATIVE FLARED TERMINAL SYSTEM	EA	3		
158	839701	CONCRETE BARRIER (TYPE 60)	M	920		
159	(F) 839725	CONCRETE BARRIER (TYPE 736)	M	429		
160	(F) 839727	CONCRETE BARRIER (TYPE 736 MODIFIED)	M	208		
161	(F) 839729	CONCRETE BARRIER (TYPE 736R MODIFIED)	M	369		
162	840515	THERMOPLASTIC PAVEMENT MARKING	M2	310		
163	840561	100 MM THERMOPLASTIC TRAFFIC STRIPE	M	9300		
164	840562	150 MM THERMOPLASTIC TRAFFIC STRIPE	M	230		
165	840563	200 MM THERMOPLASTIC TRAFFIC STRIPE	M	1500		
166	840564	200 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 3.66 M - 0.92 M)	M	1270		
167	840567	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 1.83 M - 0.30 M)	M	120		
168	840570	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 10.98 M - 3.66 M)	M	3060		
169	840571	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 5.18 M - 2.14 M)	M	1430		
170	840653	PAINT TRAFFIC STRIPE	M	3970		
171	840660	PAINT PAVEMENT MARKING	M2	3		
172	(P) 850111	PAVEMENT MARKER (RETROREFLECTIVE)	EA	1208		
173	860090	MAINTAINING EXISTING TRAFFIC MANAGEMENT SYSTEM ELEMENTS DURING CONSTRUCTION	LS	LUMP SUM		
174	860404	LIGHTING (COUNTY)	LS	LUMP SUM		
175	861100	RAMP METERING SYSTEM	LS	LUMP SUM		
176	861497	MODIFY SIGNAL AND LIGHTING (LOCATION 1)	LS	LUMP SUM		

ITEM NO.		ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
177		861498	MODIFY SIGNAL AND LIGHTING (LOCATION 2)	LS	LUMP SUM		
178		861504	MODIFY LIGHTING AND SIGN ILLUMINATION	LS	LUMP SUM		
179		999990	MOBILIZATION	LS	LUMP SUM		
<b>TOTAL BID</b>							

(F) Final Pay Quantity  
(P) Item Eligible for Partial Payment  
(LS) Lump Sum  
(SWD) Sign working day

## EXHIBIT B

### FAIR EMPLOYMENT PRACTICES ADDENDUM

1. In the performance of this Agreement, Contractor will not discriminate against any employee for employment because of race, color, sex, sexual orientation, religion, ancestry or national origin, physical disability, medical condition, marital status, political affiliation, family and medical care leave, pregnancy leave or disability leave. Contractor will take affirmative action to ensure that employees are treated during employment, without regard to their race, color, sex, sexual orientation, religion, ancestry or national origin, physical disability, medical condition, marital status, political affiliation, family and medical care leave, pregnancy leave or disability leave. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor shall post in conspicuous places, available to employees for employment, notices to be provided by State setting forth the provisions of this Fair Employment section.

2. Contractor and all subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 1290-0 et seq.), and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285.0 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code, Section 12900(a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations are incorporated into this Agreement by reference and made a part hereof as if set forth in full. Each of Contractor's contractors and all subcontractors shall give written notice of their obligations under this clause to labor organizations with which they have a collective bargaining or other agreements, as appropriate.

3. Contractor shall include the nondiscrimination and compliance provisions of this clause in all contracts and subcontracts to perform work under this Agreement.

4. Contractor will permit access to the records of employment, employment advertisements, application forms and other pertinent data and records by County, State, the State Fair Employment and Housing Commission or any other agency of the State of California designated by State, for the purposes of investigation to ascertain compliance with the Fair Employment section of this Agreement.

#### 5. Remedies for Willful Violation:

- (a). County may determine a willful violation of the Fair Employment provision to have occurred upon receipt of a final judgment to that effect from a court in an action to which Contractor was a party, or upon receipt of a written notice from the Fair Employment and Housing Commission that it has investigated and determined that Contractor has violated the Fair Employment Practices Act and had issued an order under Labor Code Section 1426 which has become final or has obtained an injunction under Labor Code Section 1429.
- (b). For willful violation of this Fair Employment provision, County shall have the right to terminate this Agreement either in whole or in part, and any loss or damage sustained by County in securing the goods or services thereunder shall be borne and paid for by Contractor and by the surety under the performance bond, if any, and County may deduct from any moneys due or thereafter may become due to Contractor, the difference between the price named in the Agreement and the actual cost thereof to County to cure Contractor's breach of this Agreement.

## EXHIBIT C

### NONDISCRIMINATION ASSURANCES

Contractor hereby agrees that, as a condition to receiving any federal financial assistance from County or the State, acting for the U.S. Department of Transportation, it will comply with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 U.S.C. 2000d-42 U.S.C. 2000d-4 (hereinafter referred to as the Act), and all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, "Nondiscrimination in Federally-Assisted Programs of the Department of Transportation - Effectuation of Title VI of the Civil Rights Act of 1964" (hereinafter referred to as the Regulations), the Federal-aid Highway Act of 1973, and other pertinent directives, to the end that in accordance with the Act, Regulations, and other pertinent directives, no person in the United States shall, on the grounds of race, color, sex, national origin, religion, age or disability, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which County receives federal financial assistance from the Federal Department of Transportation. Contractor hereby gives assurance that Contractor will promptly take any measures necessary to effectuate this agreement. This assurance is required by subsection 21.7(a) (1) of the Regulations.

More specifically, and without limiting the above general assurance, Contractor hereby gives the following specific assurances with respect to its Federal-aid Program:

1. That Contractor agrees that each "program" and each "facility" as defined in subsections 21.23 (e) and 21.23 (b) of the Regulations, will be (with regard to a "program") conducted, or will be (with regard to a "facility") operated in compliance with all requirements imposed by, or pursuant to, the Regulations.

2. That Contractor shall insert the following notification in all solicitations for bids for work or material subject to the Regulations made in connection with the Federal-aid Program and, in adapted form, in all proposals for negotiated agreements:

Contractor hereby notifies all bidders that it will affirmatively insure that in any agreement entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, national origin, religion, age, or disability in consideration for an award.

3. That Contractor shall insert the clauses of Appendix A of this assurance in every agreement subject to the Act and the Regulations.

4. That the clauses of Appendix B of this Assurance shall be included as a covenant running with the land, in any deed effecting a transfer of real property, structures, or improvements thereon, or interest therein.

5. That where Contractor receives federal financial assistance to construct a facility, or part of a facility, the Assurance shall extend to the entire facility and facilities operated in connection therewith.

6. That where Contractor receives federal financial assistance in the form, or for the acquisition, of real property or an interest in real property, the Assurance shall extend to rights to space on, over, or under such property.

7. That Contractor shall include the appropriate clauses set forth in Appendix C and D of this Assurance, as a covenant running with the land, in any future deeds, leases, permits, licenses, and similar agreements entered into by Contractor with other parties:

Appendix C;

(a) For the subsequent transfer of real property acquired or improved under the Federal-aid Program; and Appendix D;

(b) For the construction or use of or access to space on, over, or under real property acquired, or improved under the Federal-aid Program.

8. That this assurance obligates Contractor for the period during which federal financial assistance is extended to the program, except where the federal financial assistance is to provide, or is in the form of, personal property or real property of interest therein, or structures, or improvements thereon, in which case the assurance obligates Contractor or any transferee for the longer of the following periods:

(a) The period during which the property is used for a purpose for which the federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits; or

(b) The period during which Contractor retains ownership or possession of the property.

9. That Contractor shall provide for such methods of administration for the program as are found by the U.S. Secretary of Transportation, or the official to whom he delegates specific authority, to give reasonable guarantee that Contractor, other recipients, sub-grantees, applicants, sub-applicants, transferees, successors in interest, and other participants of federal financial assistance under such program will comply with all requirements imposed by, or pursuant to, the Act, the Regulations, this Assurance and the Agreement.

10. That Contractor agrees that County, the United States and the State of California have a right to seek judicial enforcement with regard to any matter arising under the Act, the Regulations, and this Assurance.

11. Contractor shall not discriminate on the basis of race, religion, age, disability, color, national origin or sex in the award and performance of any State assisted contract or in the administration of County's DBE Program or the requirements of 49 CFR Part 26. Contractor shall take all necessary and reasonable steps under 49 CFR Part 26 to ensure non discrimination in the award and administration of State assisted contracts. County's DBE Race-Neutral Implementation Agreement is incorporated by reference in this Agreement. Implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this Agreement. Upon notification to the recipient of its failure to carry out its approved DBE Race-Neutral Implementation Agreement, State may impose sanctions as provided for under 49 CFR Part 26 and may, in appropriate cases, refer the matter for enforcement under 18 USC 1001 and/or the Program Fraud Civil Remedies Act of 1985 (31 USC 3801 et. seq.).

These Assurances are given in consideration of and for the purpose of obtaining any and all federal grants, loans, agreements, property, discounts or other federal financial assistance extended after the date hereof to County by State, acting for the U.S. Department of Transportation, and is binding on Contractor, other recipients, subgrantees, applicants, sub-applicants, transferees, successors in interest and other participants in the Federal-aid Highway Program.

**APPENDIX A**  
**to**  
**EXHIBIT C**

During the performance of this Agreement, Contractor, for itself, its assignees and successors in interest (hereinafter collectively referred to as "Contractor") agrees as follows:

(1) **Compliance with Regulations:** Contractor shall comply with the regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this Agreement.

(2) **Nondiscrimination:** Contractor, with regard to the work performed by it during the Agreement, shall not discriminate on the grounds of race, color, sex, national origin, religion, age, or disability in the selection and retention of sub-applicants, including procurements of materials and leases of equipment. Contractor shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the Agreement covers a program set forth in Appendix b of the Regulations.

(3) **Solicitations for Sub-agreements, Including procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by Contractor for work performed under s Sub-agreement, including procurements of materials or leases of equipment, each potential sub-applicant or supplier shall be notified by Contractor of the Contractor's obligations under this Agreement and the Regulations relative to nondiscrimination on the grounds of race, color or national origin.

(4) **Information and Reports:** Contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to Contractor's books, records, accounts, other sources of information, and its facilities as may be determined by County, State or FHWA to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of Contractor is in the exclusive possession of another who fails or refuses to furnish this information, Contractor shall so certify to County, State or the FHWA as appropriate, and shall set forth what efforts Contractor has made to obtain the information.

(5) **Sanctions for Noncompliance:** In the event of Contractor's noncompliance with the nondiscrimination provisions of this Agreement, County shall impose such agreement sanctions as it, the State or the FHWA may determine to be appropriate, including, but not limited to:

- (a) withholding of payments to Contractor under the Agreement within a reasonable period of time, not to exceed 90 days; and/or
- (b) cancellation, termination or suspension of the Agreement, in whole or in part.

(6) **Incorporation of Provisions:** Contractor shall include the provisions of paragraphs (1) through (6) in every sub-agreement, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

Contractor shall take such action with respect to and sub-agreement or procurement as County, State or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance, provided, however, that, in the event Contractor becomes involved in, or is threatened with, litigation with a sub-applicant or supplier as a result of such direction, Contractor may request County or State enter into such litigation to protect the interests of County or State, and, in addition, Contractor may request the United States to enter into such litigation to protect the interests of the United States.

**APPENDIX B**  
**to**  
**EXHIBIT C**

The following clauses shall be included in any and all deeds effecting or recording the transfer of Project real property, structures or improvements thereon, or interest therein from the United States.

(GRANTING CLAUSE)

NOW, THEREFORE, the U.S. Department of Transportation, as authorized by law, and upon the condition that County will accept title to the lands and maintain the project constructed thereon, in accordance with Title 23, United States Code, the Regulations for the Administration of federal-aid for Highways and the policies and procedures prescribed by the Federal Highway Administration of the Department of Transportations and also in accordance with and in compliance with the Regulations pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the County all the right, title, and interest of the U.S. Department of Transportation in, and to, said lands described in Exhibit "A" attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto County and its successors forever, subject, however, to the covenant, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and shall be binding on County, its successors and assigns.

County, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns,

- (1) that no person shall on the grounds of race, color, sex, national origin, religion, age or disability, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed (;) (and)\*
- (2) that County shall use the lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in federally-assisted programs of the Department of Transportation - Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations may be amended (;) and
- (3) that in the event of breach of any of the above-mentioned nondiscrimination conditions, the U.S. Department of Transportation shall have a right to re-enter said lands and facilities on said land, and the above-described land and facilities shall thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this deed.\*

\* Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to effectuate the purposes of Title VI of the Civil Rights Act of 1964.

**APPENDIX C**  
**to**  
**EXHIBIT C**

The following clauses shall be included in any and all deeds, licenses, leases, permits, or similar instruments entered into by Contractor, pursuant to the provisions of Assurance 7(a) of Exhibit c.

The grantee (licensee, lessee, permittee, etc., as appropriate) for himself, his heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add "as covenant running with the land") that in the event facilities are constructed, maintained, or otherwise operated on the said property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation program or activity is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.), shall maintain and operate such facilities and services in compliance with all other requirements imposed pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of Secretary, Part 21, Nondiscrimination in federally-assisted programs of the Department of Transportation - Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations may be amended.

(Include in licenses, leases, permits, etc.)\*

That in the event of breach of any of the above nondiscrimination covenants, Contractor shall have the right to terminate the (license, lease, permit etc.) and to re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, lease, permit, etc.) had never been made or issued.

(Include in deeds)\*

That in the event of breach of any of the above nondiscrimination covenants, Contractor shall have the right to re-enter said land and facilities thereon, and the above-described lands and facilities shall thereupon revert to and vest in and become the absolute property of Contractor and its assigns.

\* Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to effectuate the purposes of Title VI of the Civil Rights Act of 1964.



**APPENDIX D  
to  
EXHIBIT C**

The following shall be included in all deeds, licenses, leases, permits, or similar agreements entered into by Contractor, pursuant to the provisions of Assurance 7 (b) of Exhibit c.

The grantee (licensee, lessee, permittee, etc., as appropriate) for himself, his personal representatives, successors in interest and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds, and leases add "as a covenant running with the land") that:

- (1) no person on the ground of race, color, sex, national origin, religion, age or disability, shall be excluded from participation in, denied the benefits of, or otherwise subjected to discrimination in the use of said facilities;
- (2) that in the construction of any improvements on, over, or under such land and the furnishing of services thereon, no person on the ground of race, color, sex, national origin, religion, age or disability shall be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination; and
- (3) that the (grantee, licensee, lessee, permittee, etc.,) shall use the premises in compliance with the Regulations.

(Include in licenses, leases, permits, etc.)\*

That in the event of breach of any of the above nondiscrimination covenants, Contractor shall have the right to terminate the (license, lease, permit, etc.) and to re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, lease, permit, etc.) had never been made or issued.

(Include in deeds)\*

That in the event of breach of any of the above nondiscrimination covenants, Contractor shall have the right to re-enter said land and facilities thereon, and the above-described lands and facilities shall thereupon revert to and vest in and become the absolute property of Contractor, and its assigns.

\* Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to effectuate the purposes of Title VI of the Civil Rights Act of 1964.

**COUNTY OF EL DORADO**

**PAYMENT BOND**

(Section 3247, Civil Code)

Bond No. \_\_\_\_\_

WHEREAS, the County of El Dorado, a political subdivision of the State of California, hereafter referred to as "Obligee", has awarded to Contractor

\_\_\_\_\_ hereafter referred to as "Principal", a contract for the work described as follows:

**US 50/MISSOURI FLAT ROAD  
INTERCHANGE IMPROVEMENTS PHASE 1B  
CONTRACT NO. 71336**

AND, WHEREAS, said Principal is required to furnish a bond in connection with said contract, guaranteeing the faithful performance thereof:

NOW, THEREFORE, we the undersigned Principal and Surety are held and firmly bound unto the Obligee, in the sum of \_\_\_\_\_ Dollars, (\$ \_\_\_\_\_) to be paid to the Obligee, for which payment we bind ourselves, jointly and severally.

**THE CONDITION OF THIS OBLIGATION IS SUCH,**

That if said Principal or its subcontractors shall fail to pay any of the persons named in Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to work or labor performed by such claimant, or any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Principal and his subcontractors pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such work and labor, that the Surety herein will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the Surety will pay a reasonable attorney's fee to be fixed by the court.

This bond shall inure to the benefit of any of the persons named in Civil Code Section 3181 as to give a right of action to such persons or their assigns in any suit brought upon this bond.

Dated: \_\_\_\_\_

Correspondence or Claims relating to this bond should be sent to the Surety at the following address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
PRINCIPAL  
\_\_\_\_\_  
SURETY  
\_\_\_\_\_  
ATTORNEY-IN-FACT

NOTE: Signatures of those executing for the Principal and for the Surety must be properly acknowledged, and a Power of Attorney attached for the Surety.

**NOTARY ACKNOWLEDGMENTS ATTACHED**

PRINCIPAL

ACKNOWLEDGMENT

State of California

County of \_\_\_\_\_

On \_\_\_\_\_ before me, \_\_\_\_\_,  
(here insert name and title of the officer)

personally appeared \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ ,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_

(Seal)

# SURETY

## ACKNOWLEDGMENT

State of California

County of \_\_\_\_\_

On \_\_\_\_\_ before me, \_\_\_\_\_,  
(here insert name and title of the officer)

personally appeared \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ ,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_

(Seal)

## COUNTY OF EL DORADO

US 50/Missouri Flat Road Interchange Improvements Phase 1B  
**Contract No. 71336**  
September 15, 2009

County of El Dorado DOT  
**Agreement**

09.1101.2C.532

**PERFORMANCE BOND**

Bond No. \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we \_\_\_\_\_  
the Contractor in the Contract hereto annexed, as Principal, and \_\_\_\_\_  
as Surety, are held firmly bound unto the County of El Dorado, a political subdivision of the State of California, hereinafter called the "Obligee" in the  
sum of \_\_\_\_\_ DOLLARS, (\$ \_\_\_\_\_ ) lawful money of the United States, for which payment, well  
and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

Signed, sealed and dated: \_\_\_\_\_

The condition of the above obligation is such that if said Principal as Contractor in the Contract hereto annexed shall faithfully perform each and all of the conditions of said Contract to be performed by him, and shall furnish all tools, equipment, apparatus, facilities, transportation, labor and material, other than material, if any, agreed to be furnished by the Obligee, necessary to perform and complete, and to perform and complete in a good and workmanlike manner, the work of **Contract No. 71336 for the US 50/MISSOURI FLAT ROAD INTERCHANGE IMPROVEMENTS PHASE 1B** in strict conformity with the terms and conditions set forth in the Contract hereto annexed, then this obligation shall be null and void; otherwise this bond shall remain in full force and effect and the said Surety will complete the Contract work under its own supervision, by Contract or otherwise, and pay all costs thereof for the balance due under terms of the Contract, and the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the court.

This guarantee shall insure the Obligee during the work required by any Contract and for a period of one (1) year from the date of acceptance of the work against faulty or improper materials or workmanship that may be discovered during that time.

No right of action shall accrue under this bond to or for the use of any person other than the Obligee named herein.

Dated: \_\_\_\_\_, 20\_\_\_\_.

Correspondence or Claims relating to this bond should be sent to the Surety at the following address:

_____	_____
_____	PRINCIPAL
_____	_____
_____	SURETY
_____	_____
_____	ATTORNEY-IN-FACT

NOTE: Signatures of those executing for the Principal and the Surety must be properly acknowledged, and a Power of Attorney attached for the Surety.

**NOTARY ACKNOWLEDGMENTS ATTACHED**

PRINCIPAL

ACKNOWLEDGMENT

State of California

County of \_\_\_\_\_

On \_\_\_\_\_ before me, \_\_\_\_\_,  
(here insert name and title of the officer)

personally appeared \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ ,

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_

(Seal)

SURETY

ACKNOWLEDGMENT

State of California

County of \_\_\_\_\_

On \_\_\_\_\_ before me, \_\_\_\_\_,  
(here insert name and title of the officer)

personally \_\_\_\_\_ appeared

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

,  
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature \_\_\_\_\_

(Seal)

(Because some colored inks will not reproduce in copy machines, please use black ink to complete this Proposal)

## PROPOSAL

**(to be attached to and submitted with this bound Contract Document bid package)**

**TO: THE DEPARTMENT OF TRANSPORTATION,  
COUNTY OF EL DORADO,  
STATE OF CALIFORNIA**

for the construction of

**US 50/MISSOURI FLAT ROAD  
INTERCHANGE IMPROVEMENTS PHASE 1B  
CONTRACT NO. 71336**

NAME OF BIDDER \_\_\_\_\_

BUSINESS P.O. BOX \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

BUSINESS STREET ADDRESS \_\_\_\_\_

*(Please include even if P.O. Box used)*

CITY, STATE, ZIP \_\_\_\_\_

TELEPHONE NO: AREA CODE (    ) \_\_\_\_\_

FAX NO: AREA CODE (    ) \_\_\_\_\_

The work for which this Proposal is submitted is for the construction in accordance with these Contract Documents (including the payment of not less than the State general prevailing wage rates or Federal minimum wage rates set forth herein), the Project Plans described below, including any addenda thereto, the Contract annexed hereto, and also in accordance with the California Department of Transportation Standard Plans, dated July 2004, the Standard Specifications, dated July 1999, Amendments to the July 1999 Standard Specifications, standard drawings from the Design and Improvement Standards Manual of the County of El Dorado, revised March 8, 1994 including Resolutions 199-91 and 58-94 to adopt changes to the Design and Improvement Standards Manual; the Labor Surcharge and Equipment Rental Rates in effect on the date the work is accomplished, and in accordance with the General Prevailing Wage rates. The Project Plans and Contract Documents for the work to be done are entitled:

**US 50/MISSOURI FLAT ROAD  
INTERCHANGE IMPROVEMENTS PHASE 1B  
CONTRACT NO. 71336**

Bids are to be submitted for the entire work. The amount of the bid for comparison purposes will be the total of all the items.

US 50/Missouri Flat Road Interchange Improvements Phase 1B  
**Contract No. 71336**  
September 15, 2009

County of El Dorado DOT  
**Proposal**  
Page P-1

09.1101.2C.536



The Bidder shall set forth for each unit basis item of work a unit price and a total for the item, and for each lump sum item a total for the item, all in clearly legible figures in the respective spaces provided for this purpose. In the case of unit basis items, the amount set forth under the "Item Total" column shall be the product of the unit price bid and the estimated quantity for the item.

In case of discrepancy between the item price and the total set forth for a unit basis item, the unit price shall prevail, except as provided in (a) or (b), as follows:

- (a) If the amount set forth as a unit price is unreadable or otherwise unclear, or is omitted, or is the same as the amount as the entry in the item total column, then the amount set forth in the total column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price;
- (b) (Decimal Errors) If the product of the entered unit price and the estimated quantity is exactly off by a factor of ten, one hundred, etc., or one-tenth, or one-hundredth, etc., from the entered total, the discrepancy will be resolved by using the entered unit price or item total, whichever most closely approximates percentage wise the unit price or item total in the Department's Final Estimate of cost.

If this Proposal is accepted and the undersigned Bidder shall fail to enter into the Contract and furnish the two bonds in the sums required by the State Contract Act, with surety satisfaction to the County of El Dorado and submit escrow bid documents in accordance with the Special Provisions within ten (10) days, not including Sundays and legal holidays, of the date of the letter notice from the County of El Dorado that the Contract has been awarded, the County of El Dorado may, at its option, determine that the Bidder has abandoned the Contract, and thereupon this Proposal and the acceptance thereof shall be null and void and the forfeiture of such security accompanying this Proposal shall operate and the same shall be the property of the County of El Dorado.

The undersigned, as Bidder, declares under penalty of perjury under the laws of the State of California that the only persons or parties interested in this Proposal, as principals, are those named herein; that this Proposal is made without collusion with any other person, firm, or corporation; that it has carefully examined the location of the proposed work, the annexed proposed form of Contract, and the Plans therein referred to; and that it proposes, and agrees if this Proposal is accepted, that it will contract with the County of El Dorado, in the form of the copy of the Draft Contract annexed hereto, to provide all necessary machinery, tools, apparatus, and other means of construction, and to do all the work and furnish all the materials specified in the Contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and that it will take in full payment therefore the following item prices, to wit:

**PROPOSAL PAY ITEMS AND BID PRICE SCHEDULE  
(ENGINEER'S ESTIMATE)**

**US 50/MISSOURI FLAT ROAD  
INTERCHANGE IMPROVEMENTS PHASE 1B  
CONTRACT NO. 71336**

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
1	070012	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	LUMP SUM		
2	071322	TEMPORARY FENCE (TYPE CL-1.8)	M	640		
3	071325	TEMPORARY FENCE (TYPE ESA)	M	2505		
4	072010	TRENCH AND EXCAVATION SAFETY	LS	LUMP SUM		
5	074014	FURNISH FIELD OFFICE	LS	LUMP SUM		
6	074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	LUMP SUM		
7	074028	TEMPORARY FIBER ROLL	M	18200		
8	074032	TEMPORARY CONCRETE WASHOUT FACILITY	EA	2		
9	074033	TEMPORARY CONSTRUCTION ENTRANCE	EA	6		
10	074035	TEMPORARY CHECK DAM	EA	300		
11	074045	TEMPORARY CREEK DIVERSION	LS	LUMP SUM		
12	074046	CONSTRUCT PARCEL #1	LS	LUMP SUM		
13	074047	CONSTRUCT PARCEL #2	LS	LUMP SUM		
14	074048	CONSTRUCT PARCEL #3	LS	LUMP SUM		
15	(F) 074049	RESTORATION PARCEL #2	M2	2220		
16	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM		
17	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM		

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
18	120116	TYPE II BARRICADE	EA	18		
19	120149	TEMPORARY PAVEMENT MARKING (PAINT)	M2	140		
20	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	M	19400		
21	120165	CHANNELIZER (SURFACE MOUNTED)	EA	160		
22	120300	TEMPORARY PAVEMENT MARKER	EA	1180		
23	128650	PORTABLE CHANGEABLE MESSAGE SIGN	SWD	1980		
24	129000	TEMPORARY RAILING (TYPE K)	M	5660		
25	129100	TEMPORARY CRASH CUSHION MODULE	EA	134		
26	129150	TEMPORARY TRAFFIC SCREEN	M	5660		
27	150206	ABANDON CULVERT	M	170		
28	150605	REMOVE FENCE	M	1640		
29	150662	REMOVE METAL BEAM GUARD RAILING	M	270		
30	150668	REMOVE FLARED END SECTION	EA	5		
31	150710	REMOVE TRAFFIC STRIPE	M	5065		
32	150713	REMOVE PAVEMENT MARKING	M2	19		
33	150742	REMOVE ROADSIDE SIGN	EA	53		
34	150772	REMOVE CURB	M	310		
35	150806	REMOVE PIPE	M	300		
36	150819	REMOVE UTILITY VAULT	EA	2		

ITEM NO.	ITEM CO DE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
37	150820	REMOVE INLET	EA	13		
38	150823	REMOVE DOWNDRAIN	EA	1		
39	150857	REMOVE ASPHALT CONCRETE SURFACING	M2	3712		
40	150859	REMOVE ASPHALT CONCRETE OVERSIDE DRAIN	EA	4		
41	150860	REMOVE BASE AND SURFACING	M3	2770		
42	152390	RELOCATE ROADSIDE SIGN	EA	13		
43	152430	ADJUST INLET	EA	5		
44	152668	525 MM PLASTIC PIPE-LINER	M	63		
45	153103	COLD PLANE ASPHALT CONCRETE PAVEMENT	M2	30500		
46	153216	REMOVE CONCRETE CURB AND SIDEWALK	M	79		
47	153221	REMOVE CONCRETE BARRIER	M	190		
48	153222	REMOVE CONCRETE ISLAND (PORTIONS)	M2	730		
49	153225	PREPARE CONCRETE BRIDGE DECK SURFACE	M2	5750		
50	157560	BRIDGE REMOVAL (PORTION)	LS	LUMP SUM		
51	160101	CLEARING AND GRUBBING	LS	LUMP SUM		
52	(F) 190101	ROADWAY EXCAVATION	M3	96010		
53	190113	ASBESTOS COMPLIANCE PLAN	LS	LUMP SUM		
54	190118	ASBESTOS CONTAINING MATERIAL REMOVAL	LS	LUMP SUM		
55	190119	PREPARE FUGITIVE DUST PLAN	LS	LUMP SUM		

ITEM NO.		ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
56	(F)	192003	STRUCTURE EXCAVATION (BRIDGE)	M3	1861		
57	(F)	192004	STRUCTURE EXCAVATION LOW EXPANSION MATERIAL	M3	679		
58	(F)	192005	STRUCTURE EXCAVATION (TYPE P4R)	M3	343		
59	(F)	192031	STRUCTURE EXCAVATION (PIER COLUMN)	M3	562		
60	(F)	192037	STRUCTURE EXCAVATION (RETAINING WALL)	M3	9018		
61	(F)	193003	STRUCTURE BACKFILL (BRIDGE)	M3	1069		
62	(F)	193005	STRUCTURE BACKFILL (TYPE P4R)	M3	221		
63	(F)	193013	STRUCTURE BACKFILL (RETAINING WALL)	M3	10483		
64		193114	SAND BACKFILL	M3	30		
65	(F)	198001	IMPORTED BORROW	M3	71300		
66		203016	EROSION CONTROL (TYPE D)	M2	59500		
67		203026	MOVE-IN/MOVE-OUT (EROSION CONTROL)	EA	6		
68		208729	150 MM CORRUGATED HIGH DENSITY POLYETHYLENE PIPE CONDUIT	M	62		
69		208759	50 MM CORRUGATED HIGH DENSITY POLYETHYLENE PIPE CONDUIT	M	62		
70		260201	CLASS 2 AGGREGATE BASE	M3	22999		
71		377501	SLURRY SEAL	TONNE	7		
72		390132	HOT MIX ASPHALT (TYPE A)	TONNE	15100		
73		390138	RUBBERIZED HOT MIX ASPHALT (OPEN GRADED)	TONNE	3600		
74		394074	PLACE HOT MIX ASPHALT DIKE (TYPE C)	M	50		

ITEM NO.		ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
75		394076	PLACE HOT MIX ASPHALT DIKE (TYPE E)	M	950		
76		394077	PLACE HOT MIX ASPHALT DIKE (TYPE F)	M	910		
77		394090	PLACE HOT MIX ASPHALT (MISCELLANEOUS AREA)	M2	50		
78	(P)	500060	ROCK TIEDOWN ANCHOR	EA	20		
79	(F)	510051	STRUCTURAL CONCRETE, BRIDGE FOOTING	M3	390		
80	(F)	510052	STRUCTURAL CONCRETE, HIGH EARLY STRENGTH	M3	24		
81	(F)	510053	STRUCTURAL CONCRETE, BRIDGE	M3	2890		
82	(F)	510060	STRUCTURAL CONCRETE, RETAINING WALL	M3	3179		
83	(F)	510065	STRUCTURAL CONCRETE, PIER COLUMN	M3	466		
84	(F)	510086	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	M3	137		
85	(F)	510087	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE R)	M3	104		
86	(F)	510314	CLASS 4 CONCRETE (BACKFILL)	M3	117		
87	(F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	M3	86		
88	(F)	511035	ARCHITECTURAL TREATMENT	M2	1085		
89		511106	DRILL AND BOND DOWEL	M	933		
90	(F)	515041	FURNISH POLYESTER CONCRETE OVERLAY	M3	142		
91	(F)	515042	PLACE POLYESTER CONCRETE OVERLAY	M2	5680		
92		515073	CORE CONCRETE (51 MM - 100 MM)	M	74		
93		518042	REPLACE BEARING	EA	64		

ITEM NO.		ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
94	(P)	519122	JOINT SEAL (TYPE B - MR 40 MM)	M	183		
95	(F-P)	520102	BAR REINFORCING STEEL (BRIDGE)	KG	533780		
96	(F-P)	520103	BAR REINFORCING STEEL (RETAINING WALL)	KG	304870		
97	(F)	550203	FURNISH STRUCTURAL STEEL (BRIDGE)	KG	655750		
98	(F)	550204	ERECT STRUCTURAL STEEL (BRIDGE)	KG	655750		
99	(P)	560218	FURNISH SIGN STRUCTURE (TRUSS)	KG	11300		
100	(F)	560219	INSTALL SIGN STRUCTURE (TRUSS)	KG	11300		
101		560238	FURNISH SINGLE SHEET ALUMINUM SIGN (1.6 MM-UNFRAMED)	M2	33		
102		560239	FURNISH SINGLE SHEET ALUMINUM SIGN (2.0 MM-UNFRAMED)	M2	27		
103		560241	FURNISH SINGLE SHEET ALUMINUM SIGN (1.6 MM-FRAMED)	M2	2		
104		560242	FURNISH SINGLE SHEET ALUMINUM SIGN (2.0 MM-FRAMED)	M2	7		
105		561015	1524 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	28		
106		562002	METAL (BARRIER MOUNTED SIGN)	KG	710		
107		566011	ROADSIDE SIGN - ONE POST	EA	50		
108		566012	ROADSIDE SIGN - TWO POST	EA	7		
109		566013	ROADSIDE SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	15		
110		568016	INSTALL SIGN PANEL ON EXISTING FRAME	M2	11		
111		590115	CLEAN AND PAINT STRUCTURAL STEEL	LS	LUMP SUM		
112		590135	SPOT BLAST CLEAN AND PAINT UNDERCOAT	M2	42		

ITEM NO.		ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
113		590301	WORK AREA MONITORING	LS	LUMP SUM		
114	(F)	597600	PREPARE AND PAINT CONCRETE	M2	1085		
115	(P)	650067	300 MM REINFORCED CONCRETE PIPE	M	23		
116	(P)	650069	450 MM REINFORCED CONCRETE PIPE	M	270		
117	(P)	650075	600 MM REINFORCED CONCRETE PIPE	M	170		
118	(P)	650077	750 MM REINFORCED CONCRETE PIPE	M	230		
119	(P)	650079	900 MM REINFORCED CONCRETE PIPE	M	590		
120	(P)	664015	450 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	24		
121	(P)	664033	900 MM CORRUGATED STEEL PIPE (2.01 MM THICK)	M	20		
122		680931	150 MM PERFORATED PLASTIC PIPE UNDERDRAIN	M	120		
123	(P)	705044	450 MM STEEL FLARED END SECTION	EA	1		
124	(P)	705048	900 MM STEEL FLARED END SECTION	EA	1		
125	(P)	705220	300 MM CONCRETE FLARED END SECTION	EA	2		
126	(P)	705224	600 MM CONCRETE FLARED END SECTION	EA	3		
127	(P)	705226	750 MM CONCRETE FLARED END SECTION	EA	2		
128	(P)	705227	900 MM CONCRETE FLARED END SECTION	EA	3		
129	(P)	707133	900 MM PRECAST CONCRETE PIPE INLET	M	12		
130		721010	ROCK SLOPE PROTECTION (BACKING NO. 1, METHOD B)	M3	1140		
131		727901	MINOR CONCRETE (DITCH LINING)	M3	61		



ITEM NO.		ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
132	(P)	729010	ROCK SLOPE PROTECTION FABRIC	M2	3120		
133		731510	MINOR CONCRETE (CURB, GUTTER, SIDEWALK AND DRIVEWAY)	M3	53		
134		731511	MINOR CONCRETE (ISLAND PAVING)	M3	76		
135		731517	MINOR CONCRETE (GUTTER)	M3	26		
136		731530	MINOR CONCRETE (TEXTURED PAVING)	M3	120		
137	(P)	750001	MISCELLANEOUS IRON AND STEEL	KG	5640		
138	(F-P)	750501	MISCELLANEOUS METAL (BRIDGE)	KG	16805		
139	(F-P)	750504	MISCELLANEOUS METAL (CATWALK)	KG	21100		
140	(F-P)	750505	BRIDGE DECK DRAINAGE SYSTEM	KG	1790		
141	(P)	800391	CHAIN LINK FENCE (TYPE CL-1.8)	M	2410		
142		820106	CONCRETE BARRIER DELINEATOR (400 MM) TYPE F	EA	6		
143		820107	DELINEATOR (CLASS 1)	EA	40		
144		820110	HIGHWAY POST MARKER	EA	1		
145		820125	REMOVABLE BOLLARD	EA	2		
146		820130	OBJECT MARKER	EA	7		
147		832003	METAL BEAM GUARD RAILING (WOOD POST)	M	1670		
148		832070	VEGETATION CONTROL (MINOR CONCRETE)	M2	570		
149	(F-P)	833036	ACCESS BARRIER	EA	4		
150	(F-P)	833089	TUBULAR BICYCLE RAILING	M	234		

ITEM NO.		ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
151	(F)	833142	CONCRETE BARRIER (TYPE 26 MODIFIED)	M	234		
152		839514	HANDRAILING	M	15		
153	(F-P)	839521	CABLE RAILING	M	332		
154	(P)	839541	TRANSITION RAILING (TYPE WB)	EA	3		
155	(P)	839581	END ANCHOR ASSEMBLY (TYPE SFT)	EA	6		
156	(P)	839584	ALTERNATIVE IN-LINE TERMINAL SYSTEM	EA	2		
157	(P)	839585	ALTERNATIVE FLARED TERMINAL SYSTEM	EA	3		
158		839701	CONCRETE BARRIER (TYPE 60)	M	920		
159	(F)	839725	CONCRETE BARRIER (TYPE 736)	M	429		
160	(F)	839727	CONCRETE BARRIER (TYPE 736 MODIFIED)	M	208		
161	(F)	839729	CONCRETE BARRIER (TYPE 736R MODIFIED)	M	369		
162		840515	THERMOPLASTIC PAVEMENT MARKING	M2	310		
163		840561	100 MM THERMOPLASTIC TRAFFIC STRIPE	M	9300		
164		840562	150 MM THERMOPLASTIC TRAFFIC STRIPE	M	230		
165		840563	200 MM THERMOPLASTIC TRAFFIC STRIPE	M	1500		
166		840564	200 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 3.66 M - 0.92 M)	M	1270		
167		840567	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 1.83 M - 0.30 M)	M	120		
168		840570	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 10.98 M - 3.66 M)	M	3060		
169		840571	100 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 5.18 M - 2.14 M)	M	1430		

ITEM NO.	ITEM CODE	ITEM DESCRIPTION	UNIT OF MEASURE	ESTIMATED QUANTITY	UNIT PRICE (In Figures)	TOTAL PRICE (In Figures)
170	840653	PAINT TRAFFIC STRIPE	M	3970		
171	840660	PAINT PAVEMENT MARKING	M2	3		
172	(P) 850111	PAVEMENT MARKER (RETROREFLECTIVE)	EA	1208		
173	860090	MAINTAINING EXISTING TRAFFIC MANAGEMENT SYSTEM ELEMENTS DURING CONSTRUCTION	LS	LUMP SUM		
174	860404	LIGHTING (COUNTY)	LS	LUMP SUM		
175	861100	RAMP METERING SYSTEM	LS	LUMP SUM		
176	861497	MODIFY SIGNAL AND LIGHTING (LOCATION 1)	LS	LUMP SUM		
177	861498	MODIFY SIGNAL AND LIGHTING (LOCATION 2)	LS	LUMP SUM		
178	861504	MODIFY LIGHTING AND SIGN ILLUMINATION	LS	LUMP SUM		
179	999990	MOBILIZATION	LS	LUMP SUM		
<b>TOTAL BID</b>						

(F) Final Pay Quantity  
(P) Item Eligible for Partial Payment  
(LS) Lump Sum  
(SWD) Sign working day

(NOTICE: Bidder's failure to execute the questionnaires and statements contained in this Proposal as required by applicable laws and regulations, or the determinations by El Dorado County based upon those questionnaires and statements, may prohibit award of the subject Contract to the Bidder.)

**SUBCONTRACTORS LISTING**

The Bidder shall list the name, address, and license number of each subcontractor to whom the Bidder proposes to subcontract portions of the work, as required by the provisions in “Required Listing of Proposed Subcontractors” of the Special Provisions. The Bidder shall also list the work portion to be performed by each subcontractor by listing the bid item number, description, and percentage of each item subcontracted.

Name	Location of Business	License No.	Bid Item Number(s), Bid Item Description, and Percentage of each Bid Item Subcontracted

*(THE BIDDER'S EXECUTION ON THE SIGNATURE PORTION OF THIS PROPOSAL SHALL ALSO CONSTITUTE AN ENDORSEMENT AND EXECUTION OF THOSE CERTIFICATIONS WHICH ARE A PART OF THIS PROPOSAL)*

## **EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION**

The bidder \_\_\_\_\_, proposed subcontractor \_\_\_\_\_, hereby certifies that he has \_\_\_\_\_, has not \_\_\_\_\_, participated in a previous contract or subcontract subject to the equal opportunity clauses, as required by Executive Orders 10925, 11114, or 11246, and that, where required, he has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

**Note:** The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts, which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of \$10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

## Public Contract Code Section 10285.1 Statement

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the Bidder hereby declares under penalty of perjury under the laws of the State of California that the Bidder has \_\_\_\_\_, has not \_\_\_\_\_ been convicted within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "Bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

**Note:** The Bidder must place a check mark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

## Public Contract Code Section 10162 Questionnaire

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the Bidder, any officer of the Bidder, or any employee of the Bidder who has a proprietary interest in the Bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes \_\_\_\_\_ No \_\_\_\_\_

If the answer is yes, explain the circumstances in the following space.

## Public Contract Code Section 10232 Statement

In conformance with Public Contract Code Section 10232, the Bidder, hereby states under penalty of perjury under the laws of the State of California, that no more than one final unappealable finding of contempt of court by a Federal Court has been issued against the Bidder within the immediately preceding two year period because of the Bidder's failure to comply with an order of a Federal Court which orders the Bidder to comply with an order of the National Labor Relations Board.

**Note:** The above Statement and Questionnaire are part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement and Questionnaire.  
Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

# **NONCOLLUSION AFFIDAVIT**

(Title 23 United States Code Section 112 and  
Public Contract Code Section 7106)

In conformance with Title 23 United States Code Section 112 and Public Contract Code 7106 the Bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the Contract of anyone interested in the proposed Contract; that all statements contained in the bid are true; and, further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

## **NOTE:**

The above Noncollusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Noncollusion Affidavit.

Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.



## RELIABLE CONTRACTOR DECLARATION

GRANTEE INFORMATION	
<b>GRANTEE NAME: COUNTY OF EL DORADO</b>	<b>GRANT NUMBER:</b> (TRI30-09-19)
<b>PRIMARY CONTACT NAME:</b> Anne Novotny	
CONTRACTOR INFORMATION	
<b>CONTRACTOR NAME:</b>	
<b>AUTHORIZED CONTRACTOR REPRESENTATIVE NAME:</b>	
<b>MAILING ADDRESS:</b>	
<p><i>As the authorized representative of the above identified contractor, I declare under penalty of perjury under the laws of the State of California that within the preceding three (3) years, none of the events listed in Section 17050 of Title 14, California Code of Regulations, Natural Resources, Division 7, has occurred with respect to the above identified contractor.</i></p>	
<i>Signature</i>	<i>Date</i>

# DEBARMENT AND SUSPENSION CERTIFICATION

## TITLE 49, CODE OF FEDERAL REGULATIONS, PART 29

The Bidder, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, or manager:

- is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal agency;
- has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years;
- does not have a proposed debarment pending; and
- has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will not necessarily result in denial of award, but will be considered in determining Bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Notes: Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Certification.

## **NON-LOBBYING CERTIFICATION FOR FEDERAL-AID CONTRACTS**

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No federal or state appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any federal or state agency, a member of the State Legislature or United States Congress, an officer or employee of the Legislature or Congress, or an employee of a Member of the Legislature or Congress in connection with the awarding of any state or federal contract, including this Contract, the making of any federal grant, the making of any state or federal loan, the entering into of any cooperative contract, and the extension, continuation, renewal, amendment, or modification of any state or federal contract, grant, loan, or cooperative contract.
  
- (2) If any funds other than federal appropriated funds have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any federal agency, a member of Congress, an officer or employee of Congress or an employee of a member of Congress in connection with this Contract, grant, local, or cooperative contract, the Bidder shall complete and submit Standard Form-LLL, " Disclosure of Lobbying Activities," in accordance with the form instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Bidder also agrees by submitting its bid or Proposal that it shall require that the language of this certification be included in all of its subcontracts which exceed \$100,000 and that all such subcontractors shall certify and disclose accordingly. If the Bidder is awarded this Contract, it shall ensure that all subcontractors submit certifications regarding federal lobbying activities as required by Section 1352, Title 31, United States Code and that all such certifications are made a part of any subcontracts entered into as a result of this Contract.

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352

1. Type of Federal Action: a. contract, b. grant, c. cooperative agreement, d. loan, e. loan guarantee, f. loan insurance
2. Status of Federal Action: a. bid/offer/application, b. initial award, c. post-award
3. Report Type: a. initial, b. material change
For Material Change Only: year, quarter, date of last report
4. Name and Adress of Reporting Entity: Prime, Subawardee Tier
5. If Reporting Entity in No. 4 is Subawardee. Enter Name and Address of Prime:
6. Federal Department/Agency:
7. Federal Program Name/Description: CFDA Number, if applicable
8. Federal Action Number, if known:
9. Award Amount, if known: \$
10. a. Name and Address of Lobbying Entity (if individual, last name, first name, MI):
b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI):
11. Amount of Payment (check all that apply): \$ actual planned
12. Form of Payment (check all that apply): a. cash, b. in-kind; specify: nature value
13. Type of Payment (check all that apply): a. retainer, b. one-time fee, c. commission, d. contingent fee, e. deferred, f. other, specify:
14. Brief Description of Services Performed or to be performed and Date(s) of Service, including officer(s), employee(s), or member(s) contacted, for Payment Indicated in Item 11:
15. Continuation Sheet(s) attached: Yes No
16. Information requested through this form is authorized by Title 31 U.S.C. Section 1352... Signature: Print Name: Title: Telephone No.: Date:
Federal Use Only: Authorized for Local Reproduction Standard Form - 111

Standard Form LLL Rev. 09-12-97

US 50/Missouri Flat Road Interchange Improvements Phase 1B
Contract No. 71336
September 15, 2009

County of El Dorado DOT
Proposal
Page P-21

## INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of covered Federal action or a material change to previous filing pursuant to title 31 U.S.C. Section 1352. The filing of a form is required for such payment or agreement to make payment to lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress an officer or employee of Congress or an employee of a Member of Congress in connection with a covered Federal action. Attach a continuation sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence, the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last, previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the first tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in Item 4 checks "Subawardee" then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organization level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identification in item 1 (e.g., Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract grant, or loan award number, the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitments for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influenced the covered Federal action.  
(b) Enter the full names of the individual(s) performing services and include full address if different from 10 (a). Enter Last Name, First Name and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed or will be expected to perform and the date(s) of any services rendered. Include all preparatory and related activity not just time spent in actual contact with Federal officials. Identify the Federal officer(s) or employee(s) contacted or the officer(s) employee(s) or Member(s) of Congress that were contacted.
15. Check whether or not a continuation sheet(s) is attached.
16. The certifying official shall sign and date the form, print his/her name title and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503

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Accompanying this proposal is \_\_\_\_\_

(NOTICE: INSERT THE WORDS "CASH(\$\_\_\_),"CASHIER'S CHECK," "CERTIFIED CHECK," OR "BIDDERS BOND," AS THE CASE MAY BE)

in amount equal to at least ten percent of the total of the bid.

**The names of all persons interested in the forgoing Proposal as principals are as follows:**

**IMPORTANT NOTICE:** If the Bidder or other interested person is a corporation, state legal name of corporation and place of incorporation, also names of the president, secretary, treasurer, and executive officer thereof; if a partnership, state name of partnership, also names of all individual partners; if Bidder or other interested person is an individual, state first and last names in full.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Licensed in accordance with an act providing for the registration of Contractors,

License No. \_\_\_\_\_ Classification(s) \_\_\_\_\_

**(A Copy of the afore-referenced license must be attached hereto.)**

**ADDENDA:** This Proposal is submitted with respect to the changes to the Contract included in addenda number (s) \_\_\_\_\_

(Fill in addenda numbers if addenda have been received and insert, in this Proposal, any Proposal Pay Items and Bid Price Schedules that were received as part of the addenda)

By my signature on this Proposal I certify, under penalty of perjury under the laws of the State of California, that the foregoing questionnaire and statements of Public Contract Code Sections 10162, 10232, and 10285.1 are true and correct and that the Bidder has complied with the requirements of Sections 4104 of the Subletting and Subcontracting Fair Practices Act and of Section 8103 of the Fair Employment and Housing Commission Regulations (Chapter 5 of Division 4 of Title 2 of the California Code of Regulations). By my signature on this Proposal I further certify, under penalty of perjury under the laws of the State of California and the United States of America, that the Noncollusion Affidavit required by Title 23 United States Code, Section 112 and Public Contract Code Section 7106; and the Equal Employment Opportunity Certification; and the Title 49, Code of Federal Regulations, Part 29 Debarment and Suspension Certification; and the Non-lobbying Certification for Federal-Aid Contracts and the Disclosure of Lobbying Activities (Standard Form LLL); are true and correct.

The person or persons executing this Proposal on behalf of a corporation or partnership shall be prepared to demonstrate by resolution, article, or otherwise, that such person is or that such persons are appropriately authorized to act in these regards for such corporation or partnership. Such authority shall be demonstrated to the satisfaction of the County of El Dorado.

If the signature is by an agent other than an officer of a corporation or a member of a partnership, a power of attorney authorizing said act by the agent on behalf of his principal shall be submitted with the bid forms; otherwise, the bid may be disregarded as irregular and unauthorized.

The Bidder's execution on the signature portion of this Proposal shall constitute an endorsement and execution of those affidavits, declarations and certifications which are part of this Proposal.

Executed this \_\_\_\_\_ day of \_\_\_\_\_, 2009

at \_\_\_\_\_ County, State of \_\_\_\_\_

Date: \_\_\_\_\_



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name and Title of Bidder \_\_\_\_\_

Name of Firm \_\_\_\_\_

**END OF PROPOSAL**

**NOTE: PLEASE REFER TO INSTRUCTIONS ON THE NEXT PAGE OF THIS FORM**

LOCAL AGENCY: EL DORADO COUNTY LOCATION: PLACERVILLE, CALIFORNIA

PROJECT DESCRIPTION: US Highway 50/Missouri Flat Road Interchange Improvments.

TOTAL CONTRACT AMOUNT: \$ \_\_\_\_\_

BID DATE: \_\_\_\_\_

BIDDER'S NAME: \_\_\_\_\_

CONTRACT UDBE GOAL: 7.3%

CONTRACT ITEM NO.	ITEM OF WORK AND DESCRIPTION OR SERVICES TO BE SUBCONTRACTED OR MATERIALS TO BE PROVIDED (or contracted if the bidder is a UDBE)	UDBE CERT NO. AND EXPIRATION DATE	NAME OF EACH UDBE (Must be certified on the date bids are opened - include UDBE address and phone number)	DOLLAR AMOUNT UDBE

**For Local Agency to Complete:**

Local Agency Contract Number: \_\_\_\_\_  
Federal-aid Project Number: \_\_\_\_\_

Federal Share: \_\_\_\_\_

Contract Award Date: \_\_\_\_\_

Local Agency certifies that all UDBE certifications have been verified and information is complete and accurate.

Print Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_  
Local Agency Representative

(Area Code) Telephone Number: \_\_\_\_\_

Total Claimed UDBE Participation

\$ \_\_\_\_\_

\_\_\_\_\_ %

**OF TOTAL AMOUNT BID**

Signature of Bidder \_\_\_\_\_

Date \_\_\_\_\_ (Area Code) Tel. No. \_\_\_\_\_

Person to Contact \_\_\_\_\_ (Please Type or Print)

Local Agency Bidder UDBE Commitment (Construction Contracts)  
(Rev 6/26/09)

**Distribution:** (1) Original – Local agency files

**PLEASE NOTE: It is the bidder's responsibility to verify that the UDBE(s) falls into one of the following groups in order to count towards the UDBE contract goal: 1) African Americans; 2) Asian-Pacific Americans; 3) Native Americans; 4) Women. This information may be submitted with your bid. If it is not, and you are the apparent**

**low bidder or the second or third low bidder, it must be submitted and received as specified in the Special Provisions. Failure to submit the required UDBE commitment will be grounds for finding the bid nonresponsive**

A UDBE is a firm meeting the definition of a DBE as specified in 49 CFR and is one of the following groups: African Americans, Asian-Pacific Americans, Native Americans, or Women.

The form requires specific information regarding the construction contract: Local Agency, Location, Project Description, Total Contract Amount, Bid Date, Bidder's Name, and Contract UDBE Goal.

The form has a column for the Contract Item Number and Item of Work and Description or Services to be Subcontracted or Materials to be provided by UDBEs. Prime contractors shall indicate all work to be performed by UDBEs including, if the prime is a UDBE, work performed by its own forces, if a UDBE. The UDBE shall provide a certification number to the Contractor and expiration date. Enter the UDBE prime's and subcontractors' certification numbers. The form has a column for the Names of UDBE contractors to perform the work (who must be certified on the date bids are opened and include the UDBE address and phone number).

**IMPORTANT:** Identify **all** UDBE firms participating in the project regardless of tier. Names of the First-Tier UDBE Subcontractors and their respective item(s) of work listed should be consistent, where applicable, with the names and items of work in the "List of Subcontractors" submitted with your bid.

There is a column for the UDBE participation dollar amount. (If 100% of item is not to be performed or furnished by the UDBE, describe exact portion of time to be performed or furnished by the UDBE.) See Section "Disadvantaged Business Enterprise (DBE)," of the Special Provisions (construction contracts), to determine how to count the participation of UDBE firms. Enter the Total Claimed UDBE Participation dollars and percentage of the total amount bid that these dollars represent.

Exhibit 15-G1 must be signed and dated by the person bidding. Also list a phone number in the space provided and print the name of the person to contact.

### **UDBE INFORMATION—GOOD FAITH EFFORTS, EXHIBIT 15-H**

The County of El Dorado established an Under-utilized Disadvantaged Business Enterprise (UDBE) goal of **7.3%** for this project. The information provided herein shows that a good faith effort was made.

Lowest, second lowest and third lowest bidders shall submit the following information to document adequate good faith efforts. Bidders should submit the following information even if the "Local Agency Bidder – UDBE Commitment" form indicates that the bidder has met the UDBE goal. This will protect the bidder's eligibility for award of the contract if the administering agency determines that the bidder failed to meet the goal for various reasons, e.g., a UDBE firm was not certified at bid opening, or the bidder made a mathematical error.

Submittal of only the "Local Agency Bidder – UDBE Commitment" form may not provide sufficient documentation to demonstrate that adequate good faith efforts were made.

The following items are listed in the Section entitled "Submission of UDBE Commitment" of the Special Provisions:



- A. The names and dates of each publication in which a request for UDBE participation for this project was placed by the bidder (please attach copies of advertisements or proofs of publication):

Publications	Dates of Advertisement

- B. The names and dates of written notices sent to certified UDBEs soliciting bids for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the UDBEs were interested (please attach copies of solicitations, telephone records, fax confirmations, etc.):

Names of UDBEs Solicited	Date of Initial Solicitation	Follow Up Methods and Dates

- C. The items of work which the bidder made available to UDBE firms, including, where appropriate, any breaking down of the contract work items (including those items normally performed by the bidder with its own forces) into economically feasible units to facilitate UDBE participation. It is the bidder's responsibility to demonstrate that sufficient work to facilitate UDBE participation was made available to UDBE firms.

Items of Work	Bidder Normally Performs Item (Y/N)	Breakdown of Items	Amount (\$)	Percentage Of Contract

- D. The names, addresses and phone numbers of rejected UDBE firms, the reasons for the bidder's rejection of the UDBEs, the firms selected for that work (please attach copies of quotes from the firms involved), and the price difference for each UDBE if the selected firm is not a UDBE:

Names, addresses and phone numbers of rejected UDBEs and the reasons for the bidder's rejection of the UDBEs:

Names, addresses and phone numbers of firms selected for the work above:

E. Efforts made to assist interested UDBEs in obtaining bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work which was provided to UDBEs:

F. Efforts made to assist interested UDBEs in obtaining necessary equipment, supplies, materials, or related assistance or services, excluding supplies and equipment the UDBE subcontractor purchases or leases from the prime contractor or its affiliate:

G. The names of agencies, organizations or groups contacted to provide assistance in contacting, recruiting and using UDBE firms (please attach copies of requests to agencies and any responses received, i.e., lists, Internet page download, etc.):

Name of Agency/Organization	Method/Date of Contact	Results

H. Any additional data to support a demonstration of good faith efforts (use additional sheets if necessary):

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**NOTE: USE ADDITIONAL SHEETS OF PAPER IF NECESSARY.**

**COUNTY OF EL DORADO**

**BIDDER'S BOND**

***this form MUST be used***

**KNOW ALL PEOPLE BY THESE PRESENTS, THAT WE**

\_\_\_\_\_, as **PRINCIPAL**, and  
\_\_\_\_\_  
\_\_\_\_\_

as Surety are held and firmly bound unto the County of El Dorado, a political subdivision of the State of California (hereinafter referred to as "Obligee"), in the penal sum of **TEN PERCENT (10%) OF THE AMOUNT OF THE TOTAL BID PRICE** of the Principal above named, submitted by said Principal to the Obligee for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made to the Obligee, we the Principal and Surety bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents. In no case shall the liability of the Surety hereunder exceed the sum of

**TEN PERCENT (10%) OF THE AMOUNT OF THE TOTAL BID PRICE**

**THE CONDITION OF THIS OBLIGATION IS SUCH, THAT:**

**WHEREAS**, the Principal has submitted the above-mentioned Bid to the Obligee, as aforesaid, for certain construction specifically described as follows, for which bids are to be opened at Placerville, El Dorado County, California, on **October 16, 2009** for the construction of the

**US 50/MISSOURI FLAT ROAD  
INTERCHANGE IMPROVEMENTS PHASE 1B  
CONTRACT NO. 71336**

**NOW, THEREFORE**, if the aforesaid Principal is awarded the Contract and, within the time and manner required under the Contract Documents, after the prescribed forms are presented to it for signature, enters into a written contract, in the prescribed form, in accordance with the Bid, and files two bonds with the Obligee, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall remain in full force and virtue.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorney's fee to be fixed by the Court.

**IN WITNESS WHEREOF**, we have set our hands and seals on this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

(seal) \_\_\_\_\_  
Principal

(seal) \_\_\_\_\_  
Surety

Address: \_\_\_\_\_  
\_\_\_\_\_

(NOTE: Signature of those executing for the Surety shall be properly acknowledged, and accompanied by a Certificate of Acknowledgment.)

## ATTACHMENT A – FEDERAL WAGE RATES

GENERAL DECISION: CA20080009 07/31/2009 CA9

Date: July 31, 2009

General Decision Number: CA20080009 07/31/2009

Superseded General Decision Number: CA20070009

State: California

Construction Types: Building, Heavy (Heavy and Dredging) and Highway

Counties: Alpine, Amador, Butte, Colusa, El Dorado, Glenn, Lassen, Marin, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Solano, Sonoma, Sutter, Tehama, Trinity, Yolo and Yuba Counties in California.

BUILDING CONSTRUCTION PROJECTS (excluding Amador County only);  
DREDGING CONSTRUCTION PROJECTS (does not include hopper dredge work); HEAVY CONSTRUCTION PROJECTS (does not include water well drilling); AND HIGHWAY CONSTRUCTION PROJECTS

Modification Number    Publication Date

0	02/08/2008
1	02/15/2008
2	02/22/2008
3	02/29/2008
4	03/07/2008
5	03/21/2008
6	03/28/2008
7	04/04/2008
8	04/18/2008
9	06/20/2008
10	07/04/2008
11	07/11/2008
12	07/18/2008
13	08/01/2008
14	08/08/2008
15	08/15/2008
16	08/29/2008
17	09/12/2008
18	10/03/2008
19	10/31/2008
20	12/05/2008
21	01/02/2009
22	01/16/2009
23	02/06/2009
24	02/27/2009
25	03/06/2009
26	03/20/2009
27	05/01/2009
28	06/05/2009
29	06/12/2009
30	06/26/2009
31	07/03/2009
32	07/10/2009
33	07/24/2009
34	07/31/2009

ASBE0016-001 01/01/2009

AREA 1: ALAMEDA, CONTRA COSTA, LAKE, MARIN, MENDOCINO, MONTEREY, NAPA, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, & SONOMA COUNTIES

AREA 2: ALPINE, AMADOR, BUTTE, CALAVERAS, COLUSA, DEL NORTE, EL DORADO, FRESNO, GLENN, HUMBOLDT, KINGS, LASSEN, MADERA,

US 50/Missouri Flat Road Interchange Improvements Phase 1B  
**Contract No. 71336**  
September 15, 2009

County of El Dorado DOT  
**Attachment A**  
Page AA-1

09.1101.2C.564

MARIPOSA, MERCED, MODOC, MONO, NEVADA, PLACER, PLUMAS,  
 SACRAMENTO, SAN JOAQUIN, SHASTA, SIERRA, SISKIYOU, STANISLAU,  
 SUTTER, TEHEMA, TRINITY, TULARE, TUOLUMNE, YOLO, & YUBA COUNTIES

	Rates	Fringes
Asbestos Workers/Insulator (Includes the application of all insulating materials, Protective Coverings, Coatings, and Finishes to all types of mechanical systems)		
Area 1.....	\$ 47.73	15.21
Area 2.....	\$ 39.08	15.21

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 ASBE0016-007 01/01/2009

	Rates	Fringes
Asbestos Removal worker/hazardous material handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not)....	\$ 29.60	5.40

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 BOIL0549-002 10/01/2007

	Rates	Fringes
BOILERMAKER		
(1) Marin & Solano Counties.....	\$ 37.62	19.87
(2) Remaining Counties.....	\$ 36.52	19.37

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 BRCA0003-001 08/01/2008

	Rates	Fringes
MARBLE FINISHER.....	\$ 28.02	12.12

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 BRCA0003-004 05/01/2009

AREA 1: ALPINE, AMADOR, BUTTE, COLUSA, EL DORADO, GLENN,  
 LASSEN, MODOC, NEVADA, PLACER, PLUMAS, SACRAMENTO, SHASTA,  
 SIERRA, SUTTER, TEHAMA, YOLO AND YUBA COUNTIES

AREA 2: MARIN, NAPA, SISKIYOU, SOLANO, SONOMA AND TRINITY  
 COUNTIES

	Rates	Fringes
BRICKLAYER		
AREA 1.....	\$ 33.49	16.00
AREA 2.....	\$ 38.73	18.97

SPECIALTY PAY:

- (A) Underground work such as tunnel work, sewer work,  
manholes, catch basins, sewer pipes and telephone conduit  
shall be paid \$1.25 per hour above the regular rate. Work  
in direct contact with raw sewage shall receive \$1.25 per  
hour in addition to the above.
- (B) Operating a saw or grinder shall receive \$1.25 per hour  
above the regular rate.
- (C) Guniting nozzle person shall receive \$1.25 per hour above  
the regular rate.

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 BRCA0003-008 07/01/2008

	Rates	Fringes
TERRAZZO FINISHER.....	\$ 28.81	10.61
TERRAZZO WORKER/SETTER.....	\$ 38.18	17.67

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BRCA0003-010 04/01/2009

	Rates	Fringes
TILE FINISHER		
Area 1.....	\$ 21.08	8.62
Area 2.....	\$ 21.16	11.02
Area 3.....	\$ 21.34	10.89
Area 4.....	\$ 20.83	10.37
Tile Layer		
Area 1.....	\$ 35.95	10.42
Area 2.....	\$ 34.31	12.12
Area 3.....	\$ 38.51	12.17
Area 4.....	\$ 35.35	12.12

AREA 1: Butte, Colusa, El Dorado, Glenn, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Sutter, Tehama, Yolo, Yuba  
 AREA 2: Alpine, Amador  
 AREA 3: Marin, Napa, Solano, Siskiyou  
 AREA 4: Sonoma

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BRCA0003-014 08/01/2008

	Rates	Fringes
MARBLE MASON.....	\$ 39.22	18.58

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CARP0034-001 07/01/2009

	Rates	Fringes
Diver		
Assistant Tender, ROV Tender/Technician.....	\$ 35.75	24.16
Diver standby.....	\$ 40.33	24.16
Diver Tender.....	\$ 39.33	24.16
Diver wet.....	\$ 80.66	24.16
Manifold Operator (mixed gas).....	\$ 44.33	24.16
Manifold Operator (Standby).\$	39.33	24.16

DEPTH PAY (Surface Diving):  
 050 to 100 ft \$2.00 per foot  
 101 to 150 ft \$3.00 per foot  
 151 to 220 ft \$4.00 per foot

SATURATION DIVING:  
 The standby rate shall apply until saturation starts. The saturation diving rate applies when divers are under pressure continuously until work task and decompression are complete. The diver rate shall be paid for all saturation hours.

DIVING IN ENCLOSURES:  
 Where it is necessary for Divers to enter pipes or tunnels, or other enclosures where there is no vertical ascent, the following premium shall be paid: Distance traveled from entrance 26 feet to 300 feet: \$1.00 per foot. When it is necessary for a diver to enter any pipe, tunnel or other enclosure less than 48" in height, the premium will be \$1.00 per foot.

WORK IN COMBINATION OF CLASSIFICATIONS:  
 Employees working in any combination of classifications

within the diving crew (except dive supervisor) in a shift are paid in the classification with the highest rate for that shift.

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 CARP0034-003 07/01/2009

	Rates	Fringes
Piledriver.....	\$ 35.75	24.16

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 CARP0035-001 07/01/2009

AREA 1: MARIN, NAPA, SOLANO & SONOMA

AREA 3: SACRAMENTO

AREA 4: ALPINE, BUTTE, COLUSA, EL DORADO, GLENN, LASSEN, MODOC, NEVADA, PLACER, PLUMAS, SHASTA, SIERRA, SISKIYOU, SUTTER, TEHAMA, TRINITY, YOLO & YUBA

	Rates	Fringes
Drywall Installers/Lathers:		
Area 1.....	\$ 34.75	21.40
Area 3.....	\$ 28.47	21.40
Area 4.....	\$ 28.02	21.40
Drywall Stocker/Scrapper		
Area 1.....	\$ 17.38	13.29
Area 3.....	\$ 14.24	13.29
Area 4.....	\$ 14.01	13.29

-----  
 CARP0035-004 07/01/2009

AREA 1: Marin, Napa, Solano, Sonoma Counties

AREA 3: Sacramento

AREA 4: Alpine, Amador, Butte, Colusa, El Dorado, Glenn, Lassen, Modoc, Nevada, Placer, Plumas, Shasta, Sierra, Siskiyou, Sutter, Tehama, Trinity, Yolo, Yuba counties

	Rates	Fringes
Carpenters:		
AREA 1:		
(1) Carpenter.....	\$ 36.50	20.96
(2) Hardwood Floor Layer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer.....	\$ 36.65	20.96
(3) Bridge Builder.....	\$ 36.50	20.96
(4) Millwright.....	\$ 36.60	22.55
AREA 3:		
(1) Carpenter.....	\$ 29.72	20.96
(2) Hardwood Floor Layer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer.....	\$ 29.87	20.96
(3) Bridge Builder.....	\$ 36.50	20.96
(4) Millwright.....	\$ 32.22	22.55
AREA 4:		
(1) Carpenter.....	\$ 29.27	20.96
(2) Hardwood Floor Layer, Shingler, Power Saw Operator, Steel Scaffold & Steel Shoring Erector, Saw Filer.....	\$ 29.42	20.96
(3) Bridge Builder.....	\$ 36.50	20.96
(4) Millwright.....	\$ 31.77	22.55

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CARP0035-010 07/01/2009

AREA 1: Marin, Napa, Solano & Sonoma Counties

AREA 2: Alpine, Butte, Colusa, El Dorado, Glenn, Lassen, Modoc,  
Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou,  
Sutter, Tehama, Trinity, Yolo & Yuba Counties

	Rates	Fringes
Modular Furniture Installer		
Area 1		
Installer I.....	\$ 21.60	13.89
Installer II.....	\$ 18.17	13.89
Lead Installer.....	\$ 25.05	14.39
Master Installer.....	\$ 29.27	14.39
Area 2		
Installer I.....	\$ 18.00	13.89
Installer II.....	\$ 15.23	13.89
Lead Installer.....	\$ 20.80	14.39
Master Installer.....	\$ 24.22	14.39

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ELEC0006-002 12/01/2008

MARIN, NAPA, SOLANO & SONOMA COUNTIES

	Rates	Fringes
Sound & Communications		
Installer.....	\$ 29.87	3%+11.95
Technician.....	\$ 34.01	3%+11.95

SCOPE OF WORK INCLUDES-

SOUND & VOICE TRANSMISSION (Music, Intercom, Nurse Call, Telephone); FIRE ALARM SYSTEMS [excluding fire alarm work when installed in raceways (including wire and cable pulling) and when performed on new or major remodel building projects or jobs],

TELEVISION & VIDEO SYSTEMS, SECURITY SYSTEMS, COMMUNICATIONS SYSTEMS that transmit or receive information and/or control systems that are intrinsic to the above.

EXCLUDES-

Excludes all other data systems or multiple systems which include control function or power supply; excludes installation of raceway systems, line voltage work, industrial work, life-safety systems (all buildings having floors located more than 75' above the lowest floor level having building access); excludes energy management systems.

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ELEC0180-001 06/01/2009

NAPA AND SOLANO COUNTIES

	Rates	Fringes
CABLE SPLICER.....	\$ 45.84	3%+17.91
ELECTRICIAN.....	\$ 40.75	3%+17.91

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ELEC0340-002 12/01/2008

ALPINE, AMADOR, BUTTE, COLUSA, EL DORADO, GLENN, LASSEN,  
NEVADA, PLACER, PLUMAS, SACRAMENTO, TRINITY, YOLO, YUBA COUNTIES

	Rates	Fringes
Communications System		
Sound & Communications Installer.....	\$ 24.13	3%+9.60



Sound & Communications  
Technician.....\$ 27.75      3%+9.60

**SCOPE OF WORK**

Includes the installation testing, service and maintenance, of the following systems which utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for the following TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms, and low voltage master clock systems.

**A. SOUND AND VOICE TRANSMISSION/TRANSFERENCE SYSTEMS**

Background foreground music Intercom and telephone interconnect systems, Telephone systems, Nurse call systems, Radio page systems, School intercom and sound systems, Burglar alarm systems, Low voltage master clock systems, Multi-media/multiplex systems, Sound and musical entertainment systems, RF systems, Antennas and Wave Guide.

**B. FIRE ALARM SYSTEMS**

Installation, wire pulling and testing

**C. TELEVISION AND VIDEO SYSTEMS** Television monitoring and surveillance systems, Video security systems, Video entertainment systems, Video educational systems, Microwave transmission systems, CATV and CCTV

**D. SECURITY SYSTEMS** Perimeter security systems  
Vibration sensor systems Card access systems Access control systems Sonar/infrared monitoring equipment

**E. COMMUNICATIONS SYSTEMS THAT TRANSMIT OR RECEIVE INFORMATION AND/OR CONTROL SYSTEMS THAT ARE INTRINSIC TO THE ABOVE LISTED SYSTEMS** SCADA (Supervisory Control and

Data Acquisition) PCM (Pulse Code Modulation) Inventory Control Systems Digital Data Systems Broadband and Baseband and Carriers Point of Sale Systems VSAT Data Systems Data Communication Systems RF and Remote Control Systems Fiber Optic Data Systems **WORK EXCLUDED** Raceway systems are not covered (excluding Ladder-Rack for the purpose of the above listed systems). Chases and/or nipples (not to exceed 10 feet) may be installed on open wiring systems. Energy management systems. SCADA (Supervisory Control and Data Acquisition) when not intrinsic to the above listed systems (in the scope). Fire alarm systems when installed in raceways (including wire and cable pulling) shall be performed at the electrician wage rate, when either of the following two (2) conditions apply:

1. The project involves new or major remodel building trades construction.
2. The conductors for the fire alarm system are installed in conduit.

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ELEC0340-003 06/01/2009

ALPINE (West of Sierra Mt. Watershed), AMADOR, BUTTE, COLUSA, EL DORADO (West of Sierra Mt. Watershed), GLENN, LASSEN, NEVADA (West of Sierra Mt. Watershed), PLACER, PLUMAS, SACRAMENTO, SHASTA, SIERRA (West of Sierra Mt. Watershed), SUTTER, TEHAMA, TRINITY, YOLO & YUBA COUNTIES

Rates      Fringes

ELECTRICIAN  
Remaining area.....\$ 38.43      3%+11.40

Sierra Army Depot, Herlong..\$ 48.04 3%+11.40  
 Tunnel work.....\$ 40.35 3%+11.40

CABLE SPLICER: Receives 110% of the Electrician basic hourly rate.

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 ELEC0401-005 04/01/2004

ALPINE (east of the main watershed divide), EL DORADO (east of the main watershed divide), NEVADA (east of the main watershed), PLACER (east of the main watershed divide) and SIERRA (east of the main watershed divide) COUNTIES:

	Rates	Fringes
ELECTRICIAN.....	\$ 27.00	9.83

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 ELEC0551-004 06/01/2008

MARIN AND SONOMA COUNTIES

	Rates	Fringes
ELECTRICIAN.....	\$ 42.33	3%+12.68

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 ELEC0659-006 01/01/2009

MODOC and SISKIYOU COUNTIES

	Rates	Fringes
ELECTRICIAN.....	\$ 29.78	3%+13.05

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 ELEC0659-008 02/01/2009

MODOC & SISKIYOU COUNTIES

	Rates	Fringes
Line Construction		
(1) Cable Splicer.....	\$ 45.06	12.39
(2) Lineman, Pole Sprayer, Heavy Line Equipment Man....	\$ 40.23	12.28
(3) Tree Trimmer.....	\$ 28.27	9.43
(4) Line Equipment Man.....	\$ 34.60	9.86
(5) Powdermen, Jackhammermen.....	\$ 30.17	9.48
(6) Groundman.....	\$ 28.16	9.42

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 \* ELEC1245-004 06/01/2009

ALL COUNTIES EXCEPT MODOC & SISKIYOU

	Rates	Fringes
LINE CONSTRUCTION		
(1) Lineman; Cable splicer..	\$ 44.47	13.11
(2) Equipment specialist (operates crawler tractors, commercial motor vehicles, backhoes, trenchers, cranes (50 tons and below), overhead & underground distribution line equipment).....	\$ 35.52	12.07
(3) Groundman.....	\$ 27.17	11.82
(4) Powderman.....	\$ 39.71	12.23

HOLIDAYS: New Year's Day, M.L. King Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and day after Thanksgiving, Christmas Day

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ELEV0008-001 01/01/2009

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 53.66	18.285

FOOTNOTE:

PAID VACATION: Employer contributes 8% of regular hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for 6 months to 5 years of service.  
PAID HOLIDAYS: New Years Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

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ENGI0003-008 07/01/2008

	Rates	Fringes
Dredging: (DREDGING: CLAMSHELL & DIPPER DREDGING; HYDRAULIC SUCTION DREDGING:)		
AREA 1:		
(1) Leverman.....	\$ 37.24	21.78
(2) Dredge Dozer; Heavy duty repairman.....	\$ 32.28	21.78
(3) Booster Pump Operator; Deck Engineer; Deck mate; Dredge Tender; Winch Operator.....	\$ 31.16	21.78
(4) Bargeman; Deckhand; Fireman; Leveehand; Oiler..	\$ 27.86	21.78
AREA 2:		
(1) Leverman.....	\$ 39.24	21.78
(2) Dredge Dozer; Heavy duty repairman.....	\$ 34.28	21.78
(3) Booster Pump Operator; Deck Engineer; Deck mate; Dredge Tender; Winch Operator.....	\$ 33.16	21.78
(4) Bargeman; Deckhand; Fireman; Leveehand; Oiler..	\$ 29.86	21.78

AREA DESCRIPTIONS

AREA 1: ALAMEDA,BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED,  
NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN,  
SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS,  
SUTTER, YOLO, AND YUBA COUNTIES

AREA 2: MODOC COUNTY

THE REMAINING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2  
AS NOTED BELOW:

ALPINE COUNTY:

Area 1: Northernmost part  
Area 2: Remainder

CALAVERAS COUNTY:

Area 1: Remainder  
Area 2: Eastern part

COLUSA COUNTY:

Area 1: Eastern part  
Area 2: Remainder

ELDORADO COUNTY:

Area 1: North Central part

Area 2: Remainder

FRESNO COUNTY:

Area 1: Remainder  
Area 2: Eastern part

GLENN COUNTY:

Area 1: Eastern part  
Area 2: Remainder

LASSEN COUNTY:

Area 1: Western part along the Southern portion of border  
with Shasta County  
Area 2: Remainder

MADERA COUNTY:

Area 1: Except Eastern part  
Area 2: Eastern part

MARIPOSA COUNTY

Area 1: Except Eastern part  
Area 2: Eastern part

MONTERREY COUNTY

Area 1: Except Southwestern part  
Area 2: Southwestern part

NEVADA COUNTY:

Area 1: All but the Northern portion along the border of  
Sierra County  
Area 2: Remainder

PLACER COUNTY:

Area 1: All but the Central portion  
Area 2: Remainder

PLUMAS COUNTY:

Area 1: Western portion  
Area 2: Remainder

SHASTA COUNTY:

Area 1: All but the Northeastern corner  
Area 2: Remainder

SIERRA COUNTY:

Area 1: Western part  
Area 2: Remainder

SISKIYOU COUNTY:

Area 1: Central part  
Area 2: Remainder

SONOMA COUNTY:

Area 1: All but the Northwestern corner  
Area 2: Remainder

TEHAMA COUNTY:

Area 1: All but the Western border with Mendocino & Trinity  
Counties  
Area 2: Remainder

TRINITY COUNTY:

Area 1: East Central part and the Northeastern border with  
Shasta County  
Area 2: Remainder

TUOLUMNE COUNTY:

Area 1: Except Eastern part  
Area 2: Eastern part

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ENGI0003-018 06/30/2008

"AREA 1" WAGE RATES ARE LISTED BELOW

"AREA 2" RECEIVES AN ADDITIONAL \$2.00 PER HOUR ABOVE AREA 1 RATES.

SEE AREA DEFINITIONS BELOW

	Rates	Fringes
<b>POWER EQUIPMENT OPERATOR</b>		
<b>(AREA 1:)</b>		
GROUP 1.....	\$ 36.77	20.89
GROUP 2.....	\$ 35.24	20.89
GROUP 3.....	\$ 33.76	20.89
GROUP 4.....	\$ 32.38	20.89
GROUP 5.....	\$ 31.11	20.89
GROUP 6.....	\$ 29.79	20.89
GROUP 7.....	\$ 28.65	20.89
GROUP 8.....	\$ 27.51	20.89
GROUP 8-A.....	\$ 27.30	20.89
<b>POWER EQUIPMENT OPERATOR</b>		
<b>(Cranes and Attachments -</b>		
<b>AREA 1:)</b>		
<b>GROUP 1</b>		
Cranes.....	\$ 37.65	20.89
Oiler.....	\$ 28.39	20.89
Truck crane oiler.....	\$ 30.68	20.89
<b>GROUP 2</b>		
Cranes.....	\$ 35.89	20.89
Oiler.....	\$ 28.18	20.89
Truck crane oiler.....	\$ 30.42	20.89
<b>GROUP 3</b>		
Cranes.....	\$ 34.14	20.89
Hydraulic.....	\$ 29.79	20.89
Oiler.....	\$ 27.90	20.89
Truck Crane Oiler.....	\$ 30.18	20.89
<b>POWER EQUIPMENT OPERATOR</b>		
<b>(Piledriving - AREA 1:)</b>		
<b>GROUP 1</b>		
Lifting devices.....	\$ 37.99	20.89
Oiler.....	\$ 28.73	20.89
Truck crane oiler.....	\$ 31.01	20.89
<b>GROUP 2</b>		
Lifting devices.....	\$ 36.17	20.89
Oiler.....	\$ 28.46	20.89
Truck Crane Oiler.....	\$ 30.76	20.89
<b>GROUP 3</b>		
Lifting devices.....	\$ 34.49	20.89
Oiler.....	\$ 28.24	20.89
Truck Crane Oiler.....	\$ 30.47	20.89
GROUP 4.....	\$ 32.72	20.89
GROUP 5.....	\$ 30.08	20.89
GROUP 6.....	\$ 27.85	20.89
<b>POWER EQUIPMENT OPERATOR</b>		
<b>(Steel Erection - AREA 1:)</b>		
<b>GROUP 1</b>		
Cranes.....	\$ 38.62	20.89
Oiler.....	\$ 29.07	20.89
Truck Crane Oiler.....	\$ 31.30	20.89
<b>GROUP 2</b>		
Cranes.....	\$ 36.85	20.89
Oiler.....	\$ 28.80	20.89
Truck Crane Oiler.....	\$ 31.08	20.89
<b>GROUP 3</b>		
Cranes.....	\$ 35.37	20.89
Hydraulic.....	\$ 30.42	20.89
Oiler.....	\$ 28.58	20.89
Truck Crane Oiler.....	\$ 30.81	20.89
GROUP 4.....	\$ 33.35	20.89
GROUP 5.....	\$ 32.05	20.89

POWER EQUIPMENT OPERATOR  
(Tunnel and Underground Work  
- AREA 1:)

SHAFTS, STOPES, RAISES:		
GROUP 1.....	\$ 32.87	20.89
GROUP 1-A.....	\$ 35.34	20.89
GROUP 2.....	\$ 31.61	20.89
GROUP 3.....	\$ 30.28	20.89
GROUP 4.....	\$ 29.14	20.89
GROUP 5.....	\$ 28.00	20.89
UNDERGROUND:		
GROUP 1.....	\$ 32.77	20.89
GROUP 1-A.....	\$ 35.24	20.89
GROUP 2.....	\$ 31.51	20.89
GROUP 3.....	\$ 30.18	20.89
GROUP 4.....	\$ 29.04	20.89
GROUP 5.....	\$ 27.90	20.89

FOOTNOTE: Work suspended by ropes or cables, or work on a Yo-Yo Cat: \$.60 per hour additional.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Operator of helicopter (when used in erection work); Hydraulic excavator, 7 cu. yds. and over; Power shovels, over 7 cu. yds.

GROUP 2: Highline cableway; Hydraulic excavator, 3-1/2 cu. yds. up to 7 cu. yds.; Licensed construction work boat operator, on site; Power blade operator (finish); Power shovels, over 1 cu. yd. up to and including 7 cu. yds. m.r.c.

GROUP 3: Asphalt milling machine; Cable backhoe; Combination backhoe and loader over 3/4 cu. yds.; Continuous flight tie back machine assistant to engineer or mechanic; Crane mounted continuous flight tie back machine, tonnage to apply; Crane mounted drill attachment, tonnage to apply; Dozer, slope brd; Gradall; Hydraulic excavator, up to 3 1/2 cu. yds.; Loader 4 cu. yds. and over; Long reach excavator; Multiple engine scraper (when used as push pull); Power shovels, up to and including 1 cu. yd.; Pre-stress wire wrapping machine; Side boom cat, 572 or larger; Track loader 4 cu. yds. and over; Wheel excavator (up to and including 750 cu. yds. per hour)

GROUP 4: Asphalt plant engineer/box person; Chicago boom; Combination backhoe and loader up to and including 3/4 cu. yd.; Concrete batch plant (wet or dry); Dozer and/or push cat; Pull- type elevating loader; Gradesetter, grade checker (GPS, mechanical or otherwise); Grooving and grinding machine; Heading shield operator; Heavy-duty drilling equipment, Hughes, LDH, Watson 3000 or similar; Heavy-duty repairperson and/or welder; Lime spreader; Loader under 4 cu. yds.; Lubrication and service engineer (mobile and grease rack); Mechanical finishers or spreader machine (asphalt, Barber-Greene and similar); Miller Formless M-9000 slope paver or similar; Portable crushing and screening plants; Power blade support; Roller operator, asphalt; Rubber-tired scraper, self-loading (paddle-wheels, etc.); Rubber-tired earthmoving equipment (scrappers); Slip form paver (concrete); Small tractor with drag; Soil stabilizer (P & H or equal); Spider plow and spider puller; Tubex pile rig; Unlicensed construction work boat operator, on site; Timber skidder; Track loader up to 4 yds.; Tractor-drawn scraper; Tractor, compressor drill combination; Welder; Woods-Mixer (and other similar Pugmill equipment)

GROUP 5: Cast-in-place pipe laying machine; Combination slusher and motor operator; Concrete conveyor or concrete

pump, truck or equipment mounted; Concrete conveyor, building site; Concrete pump or pumpcrete gun; Drilling equipment, Watson 2000, Texoma 700 or similar; Drilling and boring machinery, horizontal (not to apply to waterliners, wagon drills or jackhammers); Concrete mixer/all; Person and/or material hoist; Mechanical finishers (concrete) (Clary, Johnson, Bidwell Bridge Deck or similar types); Mechanical burm, curb and/or curb and gutter machine, concrete or asphalt); Mine or shaft hoist; Portable crusher; Power jumbo operator (setting slip-forms, etc., in tunnels); Screed (automatic or manual); Self-propelled compactor with dozer; Tractor with boom D6 or smaller; Trenching machine, maximum digging capacity over 5 ft. depth; Vermeer T-600B rock cutter or similar

GROUP 6: Armor-Coater (or similar); Ballast jack tamper; Boom- type backfilling machine; Assistant plant engineer; Bridge and/or gantry crane; Chemical grouting machine, truck-mounted; Chip spreading machine operator; Concrete saw (self-propelled unit on streets, highways, airports and canals); Deck engineer; Drilling equipment Texoma 600, Hughes 200 Series or similar up to and including 30 ft. m.r.c.; Drill doctor; Helicopter radio operator; Hydro-hammer or similar; Line master; Skidsteer loader, Bobcat larger than 743 series or similar (with attachments); Locomotive; Lull hi-lift or similar; Oiler, truck mounted equipment; Pavement breaker, truck-mounted, with compressor combination; Paving fabric installation and/or laying machine; Pipe bending machine (pipelines only); Pipe wrapping machine (tractor propelled and supported); Screed (except asphaltic concrete paving); Self-propelled pipeline wrapping machine; Soils & materials tester; Tractor; Self-loading chipper; Concrete barrier moving machine

GROUP 7: Ballast regulator; Boom truck or dual-purpose A-frame truck, non-rotating - under 15 tons; Truck-mounted rotating telescopic boom type lifting device, Manitex or similar (boom truck) - under 15 tons; Cary lift or similar; Combination slurry mixer and/or cleaner; Drilling equipment, 20 ft. and under m.r.c.; Firetender (hot plant); Grouting machine operator; Highline cableway signalperson; Stationary belt loader (Kolman or similar); Lift slab machine (Vagtborg and similar types); Maginnes internal full slab vibrator; Material hoist (1 drum); Mechanical trench shield; Pavement breaker with or without compressor combination); Pipe cleaning machine (tractor propelled and supported); Post driver; Roller (except asphalt); Chip Seal; Self-propelled automatically applied concrete curing machine (on streets, highways, airports and canals); Self-propelled compactor (without dozer); Signalperson; Slip-form pumps (lifting device for concrete forms); Tie spacer; Tower mobile; Trenching machine, maximum digging capacity up to and including 5 ft. depth; Truck- type loader

GROUP 8: Bit sharpener; Boiler tender; Box operator; Brakeperson; Combination mixer and compressor (shotcrete/gunite); Compressor operator; Deckhand; Fire tender; Forklift (under 20 ft.); Generator; Gunite/shotcrete equipment operator; Hydraulic monitor; Ken seal machine (or similar); Mixermobile; Oiler; Pump operator; Refrigeration plant; Reservoir-debris tug (self-propelled floating); Ross Carrier (construction site); Rotomist operator; Self-propelled tape machine; Shuttlecar; Self-propelled power sweeper operator (includes vacuum sweeper); Slusher operator; Surface heater; Switchperson; Tar pot firetender; Tugger hoist, single drum; Vacuum cooling plant; Welding machine (powered other than by electricity)

GROUP 8-A: Elevator operator; Skidsteer loader-Bobcat 743

series or smaller, and similar (without attachments); Mini excavator under 25 H.P. (backhoe-trencher); Tub grinder wood chipper

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#### ALL CRANES AND ATTACHMENTS

GROUP 1: Clamshell and dragline over 7 cu. yds.; Crane, over 100 tons; Derrick, over 100 tons; Derrick barge pedestal-mounted, over 100 tons; Self-propelled boom-type lifting device, over 100 tons

GROUP 2: Clamshell and dragline over 1 cu. yd. up to and including 7 cu. yds.; Crane, over 45 tons up to and including 100 tons; Derrick barge, 100 tons and under; Self-propelled boom-type lifting device, over 45 tons; Tower crane

GROUP 3: Clamshell and dragline up to and including 1 cu. yd.; Cranes 45 tons and under; Self-propelled boom-type lifting device 45 tons and under; Boom Truck or dual purpose A-frame truck, non-rotating over 15 tons; Truck-mounted rotating telescopic boom type lifting device, Manitex or similar (boom truck) over 15 tons;

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#### PILEDRIVERS

GROUP 1: Derrick barge pedestal mounted over 100 tons; Clamshell over 7 cu. yds.; Self-propelled boom-type lifting device over 100 tons; Truck crane or crawler, land or barge mounted over 100 tons

GROUP 2: Derrick barge pedestal mounted 45 tons to and including 100 tons; Clamshell up to and including 7 cu. yds.; Self-propelled boom-type lifting device over 45 tons; Truck crane or crawler, land or barge mounted, over 45 tons up to and including 100 tons; Fundex F-12 hydraulic pile rig

GROUP 3: Derrick barge pedestal mounted under 45 tons; Self-propelled boom-type lifting device 45 tons and under; Skid/scow piledriver, any tonnage; Truck crane or crawler, land or barge mounted 45 tons and under

GROUP 4: Assistant operator in lieu of assistant to engineer; Forklift, 10 tons and over; Heavy-duty repairperson/welder

GROUP 5: Deck engineer

GROUP 6: Deckhand; Fire tender

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#### STEEL ERECTORS

GROUP 1: Crane over 100 tons; Derrick over 100 tons; Self-propelled boom-type lifting device over 100 tons

GROUP 2: Crane over 45 tons to 100 tons; Derrick under 100 tons; Self-propelled boom-type lifting device over 45 tons to 100 tons; Tower crane

GROUP 3: Crane, 45 tons and under; Self-propelled boom-type lifting device, 45 tons and under

GROUP 4: Chicago boom; Forklift, 10 tons and over; Heavy-duty repair person/welder

GROUP 5: Boom cat



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TUNNEL AND UNDERGROUND WORK

GROUP 1-A: Tunnel bore machine operator, 20' diameter or more

GROUP 1: Heading shield operator; Heavy-duty repairperson; Mucking machine (rubber tired, rail or track type); Raised bore operator (tunnels); Tunnel mole bore operator

GROUP 2: Combination slusher and motor operator; Concrete pump or pumpcrete gun; Power jumbo operator

GROUP 3: Drill doctor; Mine or shaft hoist

GROUP 4: Combination slurry mixer cleaner; Grouting Machine operator; Motorman

GROUP 5: Bit Sharpener; Brakeman; Combination mixer and compressor (gunite); Compressor operator; Oiler; Pump operator; Slusher operator

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AREA DESCRIPTIONS:

POWER EQUIPMENT OPERATORS, CRANES AND ATTACHMENTS, TUNNEL AND UNDERGROUND [These areas do not apply to Piledrivers and Steel Erectors]

AREA 1: ALAMEDA, BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES

AREA 2 - MODOC COUNTY

THE REMAINING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW:

ALPINE COUNTY:

Area 1: Northernmost part  
Area 2: Remainder

CALAVERAS COUNTY:

Area 1: Except Eastern part  
Area 2: Eastern part

COLUSA COUNTY:

Area 1: Eastern part  
Area 2: Remainder

DEL NORTE COUNTY:

Area 1: Extreme Southwestern corner  
Area 2: Remainder

ELDORADO COUNTY:

Area 1: North Central part  
Area 2: Remainder

FRESNO COUNTY

Area 1: Except Eastern part  
Area 2: Eastern part

GLENN COUNTY:

Area 1: Eastern part  
Area 2: Remainder

HUMBOLDT COUNTY:

Area 1: Except Eastern and Southwestern parts  
Area 2: Remainder

LAKE COUNTY:  
Area 1: Southern part  
Area 2: Remainder

LASSEN COUNTY:  
Area 1: Western part along the Southern portion of border  
with Shasta County  
Area 2: Remainder

MADERA COUNTY  
Area 1: Remainder  
Area 2: Eastern part

MARIPOSA COUNTY  
Area 1: Remainder  
Area 2: Eastern part

MENDOCINO COUNTY:  
Area 1: Central and Southeastern parts  
Area 2: Remainder

MONTEREY COUNTY  
Area 1: Remainder  
Area 2: Southwestern part

NEVADA COUNTY:  
Area 1: All but the Northern portion along the border of  
Sierra County  
Area 2: Remainder

PLACER COUNTY:  
Area 1: All but the Central portion  
Area 2: Remainder

PLUMAS COUNTY:  
Area 1: Western portion  
Area 2: Remainder

SHASTA COUNTY:  
Area 1: All but the Northeastern corner  
Area 2: Remainder

SIERRA COUNTY:  
Area 1: Western part  
Area 2: Remainder

SISKIYOU COUNTY:  
Area 1: Central part  
Area 2: Remainder

SONOMA COUNTY:  
Area 1: All but the Northwestern corner  
Area 2: Remainder

TEHAMA COUNTY:  
Area 1: All but the Western border with Mendocino & Trinity  
Counties  
Area 2: Remainder

TRINITY COUNTY:  
Area 1: East Central part and the Northeast border with  
Shasta County  
Area 2: Remainder

TULARE COUNTY;  
Area 1: Remainder  
Area 2: Eastern part

TUOLUMNE COUNTY:  
Area 1: Remainder  
Area 2: Eastern Part

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ENGI0003-019 06/30/2008

SEE AREA DESCRIPTIONS BELOW

	Rates	Fringes
POWER EQUIPMENT OPERATOR (LANDSCAPE WORK ONLY)		
GROUP 1		
AREA 1.....	\$ 28.11	20.26
AREA 2.....	\$ 30.11	20.26
GROUP 2		
AREA 1.....	\$ 24.51	20.26
AREA 2.....	\$ 26.51	20.26
GROUP 3		
AREA 1.....	\$ 19.90	20.26
AREA 2.....	\$ 21.90	20.26

GROUP DESCRIPTIONS:

GROUP 1: Landscape Finish Grade Operator: All finish grade work regardless of equipment used, and all equipment with a rating more than 65 HP.

GROUP 2: Landscape Operator up to 65 HP: All equipment with a manufacturer's rating of 65 HP or less except equipment covered by Group 1 or Group 3. The following equipment shall be included except when used for finish work as long as manufacturer's rating is 65 HP or less: A-Frame and Winch Truck, Backhoe, Forklift, Hydragraphic Seeder Machine, Roller, Rubber-Tired and Track Earthmoving Equipment, Skiploader, Straw Blowers, and Trencher 31 HP up to 65 HP.

GROUP 3: Landscape Utility Operator: Small Rubber-Tired Tractor, Trencher Under 31 HP.

AREA DESCRIPTIONS:

AREA 1: ALAMEDA, BUTTE, CONTRA COSTA, KINGS, MARIN, MERCED, NAPA, SACRAMENTO, SAN BENITO, SAN FRANCISCO, SAN JOAQUIN, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, STANISLAUS, SUTTER, YOLO, AND YUBA COUNTIES

AREA 2 - MODOC COUNTY

THE REMAINING COUNTIES ARE SPLIT BETWEEN AREA 1 AND AREA 2 AS NOTED BELOW:

ALPINE COUNTY:

Area 1: Northernmost part  
Area 2: Remainder

CALAVERAS COUNTY:

Area 1: Except Eastern part  
Area 2: Eastern part

COLUSA COUNTY:

Area 1: Eastern part  
Area 2: Remainder

DEL NORTE COUNTY:

Area 1: Extreme Southwestern corner  
Area 2: Remainder

ELDORADO COUNTY:

Area 1: North Central part

Area 2: Remainder

FRESNO COUNTY

Area 1: Except Eastern part

Area 2: Eastern part

GLENN COUNTY:

Area 1: Eastern part

Area 2: Remainder

HUMBOLDT COUNTY:

Area 1: Except Eastern and Southwestern parts

Area 2: Remainder

LAKE COUNTY:

Area 1: Southern part

Area 2: Remainder

LASSEN COUNTY:

Area 1: Western part along the Southern portion of border  
with Shasta County

Area 2: Remainder

MADERA COUNTY

Area 1: Remainder

Area 2: Eastern part

MARIPOSA COUNTY

Area 1: Remainder

Area 2: Eastern part

MENDOCINO COUNTY:

Area 1: Central and Southeastern parts

Area 2: Remainder

MONTEREY COUNTY

Area 1: Remainder

Area 2: Southwestern part

NEVADA COUNTY:

Area 1: All but the Northern portion along the border of  
Sierra County

Area 2: Remainder

PLACER COUNTY:

Area 1: All but the Central portion

Area 2: Remainder

PLUMAS COUNTY:

Area 1: Western portion

Area 2: Remainder

SHASTA COUNTY:

Area 1: All but the Northeastern corner

Area 2: Remainder

SIERRA COUNTY:

Area 1: Western part

Area 2: Remainder

SISKIYOU COUNTY:

Area 1: Central part

Area 2: Remainder

SONOMA COUNTY:

Area 1: All but the Northwestern corner

Area 2: Reaminder

TEHAMA COUNTY:

Area 1: All but the Western border with mendocino & Trinity  
Counties

Area 2: Remainder

TRINITY COUNTY:

Area 1: East Central part and the Northeaster border with Shasta County  
Area 2: Remainder

TULARE COUNTY:

Area 1: Remainder  
Area 2: Eastern part

TUOLUMNE COUNTY:

Area 1: Remainder  
Area 2: Eastern Part

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IRON0002-004 07/01/2009

	Rates	Fringes
Ironworkers:		
Fence Erector.....	\$ 26.58	15.24
Ornamental, Reinforcing and Structural.....	\$ 33.00	23.17

PREMIUM PAY:

\$6.00 additional per hour at the following locations:

China Lake Naval Test Station, Chocolate Mountains Naval Reserve-Niland, Edwards AFB, Fort Irwin Military Station, Fort Irwin Training Center-Goldstone, San Clemente Island, San Nicholas Island, Susanville Federal Prison, 29 Palms - Marine Corps, U.S. Marine Base - Barstow, U.S. Naval Air Facility - Sealey, Vandenberg AFB

\$4.00 additional per hour at the following locations:

Army Defense Language Institute - Monterey, Fallon Air Base, Naval Post Graduate School - Monterey, Yermo Marine Corps Logistics Center

\$2.00 additional per hour at the following locations:

Port Hueneme, Port Mugu, U.S. Coast Guard Station - Two Rock

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LABO0067-002 12/01/2008

AREA "A" - ALAMEDA, CONTRA COSTA, MARIN, SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES

AREA "B" - ALPINE, AMADOR, BUTTE, CALAVERAS, COLUSA, DEL NORTE, EL DORADO, FRESNO, GLENN, HUMBOLDT, KINGS, LAKE, LASSEN, MADERA, MARIPOSA, MENDOCINO, MERCED, MODOC, MONTEREY, NAPA, NEVADA, PLACER, PLUMAS, SACRAMENTO, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, SHASTA, SIERRA, SISKIYOU, SOLANO, SONOMA, STANISLAUS, SUTTER, TEHAMA, TRINITY, TULARE, TUOLUMNE, YOLO AND YUBA COUNTIES

	Rates	Fringes
Asbestos Removal Laborer		
Areas A & B.....	\$ 18.08	6.60
LABORER (Lead Removal)		
Area A.....	\$ 34.15	6.11
Area B.....	\$ 33.15	6.11

ASBESTOS REMOVAL-SCOPE OF WORK: Site mobilization; initial site clean-up; site preparation; removal of asbestos-containing materials from walls and ceilings; or from pipes, boilers and mechanical systems only if they are

being scrapped; encapsulation, enclosure and disposal of asbestos-containing materials by hand or with equipment or machinery; scaffolding; fabrication of temporary wooden barriers; and assembly of decontamination stations.

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LABO0067-003 07/01/2008

AREA A: ALAMEDA, CONTRA COSTA, MARIN, SAN FRANCISCO, SAN MATEO & SANTA CLARA

AREA B: ALPINE, AMADOR, BUTTE, CALAVERAS, COLUSA, DEL NORTE, EL DORADO, FRESNO, GLENN, HUMBOLDT, KINGS, LAKE, LASSEN, MADERA, MARIPOSA, MENOCINO, MERCED, MODOC, MONTEREY, NAPA, NEVADA, PLACER, PLUMAS, SACRAMENTO, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, SIERRA, SHASTA, SISKIYOU, SOLANO, SONOMA, STANISLAUS, TEHAMA, TRINITY, TULARE, TUOLUMNE, YOLO & YUBA COUNTIES

Rates Fringes

LABORER (TRAFFIC CONTROL/LANE CLOSURE)

Escort Driver, Flag Person		
Area A.....	\$ 25.89	14.13
Area B.....	\$ 24.89	14.13
Traffic Control Person I		
Area A.....	\$ 26.19	14.13
Area B.....	\$ 25.19	14.13
Traffic Control Person II		
Area A.....	\$ 23.69	14.13
Area B.....	\$ 22.69	14.13

TRAFFIC CONTROL PERSON I: Layout of traffic control, crash cushions, construction area and roadside signage.

TRAFFIC CONTROL PERSON II: Installation and removal of temporary/permanent signs, markers, delineators and crash cushions.

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LABO0067-006 06/29/2009

AREA "A" - ALAMEDA, CONTRA COSTA, MARIN, SAN FRANCISCO, SAN MATEO AND SANTA CLARA COUNTIES

AREA "B" - ALPINE, AMADOR, BUTTE, CALAVERAS, COLUSA, EL DORADO, FRESNO, GLENN, KINGS, LASSEN, MADERA, MARIPOSA, MERCED, MODOC, MONTEREY, NAPA, NEVADA, PLACER, PLUMAS, SACRAMENTO, SAN BENITO, SAN JOAQUIN, SANTA CRUZ, SHASTA, SIERRA, SISKIYOU, SOLANO, SONOMA, STANISLAUS, SUTTER, TEHAMA, TRINITY, TULARE, TUOLUMNE, YOLO AND YUBA COUNTIES

Rates Fringes

Laborers: (CONSTRUCTION CRAFT LABORERS - AREA A:)

Construction Specialist		
Group.....	\$ 27.84	14.93
GROUP 1.....	\$ 27.14	14.93
GROUP 1-a.....	\$ 27.36	14.93
GROUP 1-c.....	\$ 27.19	14.93
GROUP 1-e.....	\$ 27.69	14.93
GROUP 1-f.....	\$ 27.72	14.93
GROUP 1-g (Contra Costa County).....	\$ 27.34	14.93
GROUP 2.....	\$ 26.99	14.93
GROUP 3.....	\$ 26.89	14.93
GROUP 4.....	\$ 20.58	14.93

See groups 1-b and 1-d under laborer classifications.

Laborers: (CONSTRUCTION CRAFT LABORERS - AREA B:)

Construction Specialist

Group.....	\$ 26.84	14.93
GROUP 1.....	\$ 26.14	14.93
GROUP 1-a.....	\$ 26.36	14.93
GROUP 1-c.....	\$ 26.19	14.93
GROUP 1-e.....	\$ 26.69	14.93
GROUP 1-f.....	\$ 26.72	14.93
GROUP 2.....	\$ 25.99	14.93
GROUP 3.....	\$ 25.89	14.93
GROUP 4.....	\$ 19.58	14.93
See groups 1-b and 1-d under laborer classifications.		
Laborers: (GUNITE - AREA A:)		
GROUP 1.....	\$ 28.10	14.93
GROUP 2.....	\$ 27.60	14.93
GROUP 3.....	\$ 27.01	14.93
GROUP 4.....	\$ 26.89	14.93
Laborers: (GUNITE - AREA B:)		
GROUP 1.....	\$ 27.10	14.93
GROUP 2.....	\$ 26.60	14.93
GROUP 3.....	\$ 26.01	14.93
GROUP 4.....	\$ 25.89	14.93
Laborers: (WRECKING - AREA A:)		
GROUP 1.....	\$ 27.14	14.93
GROUP 2.....	\$ 26.99	14.93
Laborers: (WRECKING - AREA B:)		
GROUP 1.....	\$ 26.14	14.93
GROUP 2.....	\$ 25.99	14.93
Landscape Laborer (GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA A:)		
(1) New Construction.....	\$ 26.89	14.93
(2) Establishment Warranty Period.....	\$ 20.58	14.59
Landscape Laborer (GARDENERS, HORTICULTURAL & LANDSCAPE LABORERS - AREA B:)		
(1) New Construction.....	\$ 25.89	14.93
(2) Establishment Warranty Period.....	\$ 19.58	14.59

FOOTNOTES:

Laborers working off or with or from bos'n chairs, swinging scaffolds, belts shall receive \$0.25 per hour above the applicable wage rate. This shall not apply to workers entitled to receive the wage rate set forth in Group 1-a below.

LABORER CLASSIFICATIONS

CONSTRUCTION SPECIALIST GROUP: Asphalt ironer and raker; Chainsaw; Laser beam in connection with laborers' work; Cast-in- place manhole form setter; Pressure pipelayer; Davis trencher - 300 or similar type (and all small trenchers); Blaster; Diamond driller; Multiple unit drill; Hydraulic drill

GROUP 1: Asphalt spreader boxes (all types); Barko, Wacker and similar type tampers; Buggymobile; Caulker, bander, pipewrapper, conduit layer, plastic pipelayer; Certified hazardous waste worker including Leade Abatement; Compactors of all types; Concrete and magnesite mixer, 1/2 yd. and under; Concrete pan work; Concrete sander; Concrete saw; Cribber and/or shoring; Cut granite curb setter; Dri-pak-it machine; Faller, logloader and buckler; Form raiser, slip forms; Green cutter; Headerboard, Hubsetter, aligner, by any method; High pressure blow pipe (1-1/2" or over, 100 lbs. pressure/over); Hydro seeder and similar type; Jackhammer operator; Jacking of pipe over 12 inches; Jackson and similar type compactor; Kettle tender, pot and

worker applying asphalt, lay-kold, creosote, lime, caustic and similar type materials (applying means applying, dipping or handling of such materials); Lagging, sheeting, whaling, bracing, trenchjacking, lagging hammer; Magnesite, epoxyresin, fiberglass, mastic worker (wet or dry); No joint pipe and stripping of same, including repair of voids; Pavement breaker and spader, including tool grinder; Perma curb; Pipelayer (including grade checking in connection with pipelaying); Precast-manhole setter; Pressure pipe tester; Post hole digger, air, gas and electric; Power broom sweeper; Power tampers of all types (except as shown in Group 2); Ram set gun and stud gun; Riprap stonepaver and rock-slinger, including placing of sacked concrete and/or sand (wet or dry) and gabions and similar type; Rotary scarifier or multiple head concrete chipping scarifier; Roto and Ditch Witch; Rototiller; Sandblaster, pot, gun, nozzle operators; Signalling and rigging; Tank cleaner; Tree climber; Turbo blaster; Vibrascreed, bull float in connection with laborers' work; Vibrator; Hazardous waste worker (lead removal); Asbestos and mold removal worker

GROUP 1-a: Joy drill model TWM-2A; Gardner-Denver model DH143 and similar type drills; Track driller; Jack leg driller; Wagon driller; Mechanical drillers, all types regardless of type or method of power; Mechanical pipe layers, all types regardless of type or method of power; Blaster and powder; All work of loading, placing and blasting of all powder and explosives of whatever type regardless of method used for such loading and placing; High scalers (including drilling of same); Tree topper; Bit grinder

GROUP 1-b: Sewer cleaners shall receive \$4.00 per day above Group 1 wage rates. "Sewer cleaner" means any worker who handles or comes in contact with raw sewage in small diameter sewers. Those who work inside recently active, large diameter sewers, and all recently active sewer manholes shall receive \$5.00 per day above Group 1 wage rates.

GROUP 1-c: Burning and welding in connection with laborers' work; Synthetic thermoplastics and similar type welding

GROUP 1-d: Maintenance and repair track and road beds. All employees performing work covered herein shall receive \$ .25 per hour above their regular rate for all work performed on underground structures not specifically covered herein. This paragraph shall not be construed to apply to work below ground level in open cut. It shall apply to cut and cover work of subway construction after the temporary cover has been placed.

GROUP 1-e: Work on and/or in bell hole footings and shafts thereof, and work on and in deep footings. (A deep footing is a hole 15 feet or more in depth.) In the event the depth of the footing is unknown at the commencement of excavation, and the final depth exceeds 15 feet, the deep footing wage rate would apply to all employees for each and every day worked on or in the excavation of the footing from the date of inception.

GROUP 1-f: Wire winding machine in connection with guniting or shot crete

GROUP 1-g, CONTRA COSTA COUNTY: Pipelayer (including grade checking in connection with pipelaying); Caulker; Bander; Pipewrapper; Conduit layer; Plastic pipe layer; Pressure pipe tester; No joint pipe and stripping of same, including repair of voids; Precast manhole setters, cast in place manhole form setters



GROUP 2: Asphalt shoveler; Cement dumper and handling dry cement or gypsum; Choke-setter and rigger (clearing work); Concrete bucket dumper and chute; Concrete chipping and grinding; Concrete laborer (wet or dry); Driller tender, chuck tender, nipper; Guinea chaser (stake), grout crew; High pressure nozzle, adductor; Hydraulic monitor (over 100 lbs. pressure); Loading and unloading, carrying and hauling of all rods and materials for use in reinforcing concrete construction; Pittsburgh chipper and similar type brush shredders; Sloper; Single foot, hand-held, pneumatic tamper; All pneumatic, air, gas and electric tools not listed in Groups 1 through 1-f; Jacking of pipe - under 12 inches

GROUP 3: Construction laborers, including bridge and general laborer; Dump, load spotter; Flag person; Fire watcher; Fence erector; Guardrail erector; Gardener, horticultural and landscape laborer; Jetting; Limber, brush loader and piler; Pavement marker (button setter); Maintenance, repair track and road beds; Streetcar and railroad construction track laborer; Temporary air and water lines, Victaulic or similar; Tool room attendant (jobsite only)

GROUP 4: Final clean-up work of debris, grounds and building including but not limited to: street cleaner; cleaning and washing windows; brick cleaner (jobsite only); material cleaner (jobsite only). The classification "material cleaner" is to be utilized under the following conditions:  
 A: at demolition site for the salvage of the material.  
 B: at the conclusion of a job where the material is to be salvaged and stocked to be reused on another job.  
 C: for the cleaning of salvage material at the jobsite or temporary jobsite yard.

The material cleaner classification should not be used in the performance of "form stripping, cleaning and oiling and moving to the next point of erection".

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**GUNITE LABORER CLASSIFICATIONS**

- GROUP 1: Structural Nozzleman
- GROUP 2: Nozzleman, Gunman, Potman, Groundman
- GROUP 3: Reboundman
- GROUP 4: Guniting laborer

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**WRECKING WORK LABORER CLASSIFICATIONS**

- GROUP 1: Skilled wrecker (removing and salvaging of sash, windows and materials)
- GROUP 2: Semi-skilled wrecker (salvaging of other building materials)

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 LABO0067-010 06/29/2009

	Rates	Fringes
Tunnel and Shaft Laborers:		
GROUP 1.....	\$ 33.35	14.93
GROUP 2.....	\$ 33.12	14.93
GROUP 3.....	\$ 32.87	14.93
GROUP 4.....	\$ 32.42	14.93
GROUP 5.....	\$ 31.88	14.93
Shotcrete Specialist.....	\$ 33.87	14.93

TUNNEL AND SHAFT CLASSIFICATIONS

GROUP 1: Diamond driller; Groundmen; Gunite and shotcrete nozzlelemen

GROUP 2: Rodmen; Shaft work & raise (below actual or excavated ground level)

GROUP 3: Bit grinder; Blaster, driller, powdermen, heading; Cherry pickermen - where car is lifted; Concrete finisher in tunnel; Concrete screedman; Grout pumpman and potman; Gunite & shotcrete gunman & potman; Headermen; High pressure nozzleman; Miner - tunnel, including top and bottom man on shaft and raise work; Nipper; Nozzleman on slick line; Sandblaster - potman, Robotic Shotcrete Placer, Segment Erector, Tunnel Muck Hauler, Steel Form raiser and setter; Timberman, retimberman (wood or steel or substitute materials therefore); Tugger (for tunnel laborer work); Cable tender; Chuck tender; Powderman - primer house

GROUP 4: Vibrator operator, pavement breaker; Bull gang - muckers, trackmen; Concrete crew - includes rodding and spreading, Dumpmen (any method)

GROUP 5: Grout crew; Reboundman; Swamper/ Brakeman

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LABO0073-001 07/01/2007

	Rates	Fringes
Plasterer tender.....	\$ 26.17	12.68

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LABO0139-002 07/01/2009

NAPA, SOLANO AND SONOMA COUNTIES

	Rates	Fringes
LABORER (Brick)		
Mason Tender-Brick.....	\$ 27.28	14.93

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LABO0185-002 07/01/2009

ALPINE, AMADOR, BUTTE, COLUSA, EL DORADO, GLENN, LASSEN, MODOC, NEVADA, PLACER, PLUMAS, SACRAMENTO, SHASTA, SIERRA, SISKIYOU, SUTTER, TEHAMA, TRINITY, YOLO AND YUBA COUNTIES

	Rates	Fringes
LABORER		
Mason Tender-Brick.....	\$ 27.03	14.93

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LABO0291-001 07/01/2009

MARIN COUNTY

	Rates	Fringes
LABORER		
Mason Tender-Brick.....	\$ 28.28	14.93

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PAIN0016-004 01/01/2009

MARIN, NAPA, SOLANO & SONOMA COUNTIES

	Rates	Fringes
Painters:.....	\$ 33.80	15.32

PREMIUMS:

EXOTIC MATERIALS - \$0.75 additional per hour.  
 SPRAY WORK: - \$0.50 additional per hour.  
 INDUSTRIAL PAINTING - \$0.25 additional per hour  
 [Work on industrial buildings used for the manufacture and  
 processing of goods for sale or service; steel construction  
 (bridges), stacks, towers, tanks, and similar structures]

HIGH WORK:  
 over 50 feet - \$2.00 per hour additional  
 100 to 180 feet - \$4.00 per hour additional  
 Over 180 feet - \$6.00 per hour additional

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 PAIN0016-005 07/01/2009

ALPINE, BUTTE, COLUSA, EL DORADO (west of the Sierra Nevada  
 Mountains), GLENN, LASSEN (west of Hwy. 395, excluding Honey  
 Lake); MARIN, MODOC, NAPA, NEVADA (west of the Sierra Nevada  
 Mountains), PLACER (west of the Sierra Nevada Mountains),  
 PLUMAS, SACRAMENTO, SHASTA, SIERRA (west of the Sierra Nevada  
 Mountains), SISKIYOU, SOLANO, SONOMA, SUTTER, TEHAMA, TRINITY,  
 YOLO AND YUBA COUNTIES

	Rates	Fringes
DRYWALL FINISHER/TAPER.....	\$ 37.03	14.28

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 PAIN0016-007 01/01/2009

ALPINE, AMADOR, BUTTE, COLUSA, EL DORADO (west of the Sierra  
 Nevada Mountains), GLENN, LASSEN (west of Highway 395,  
 excluding Honey Lake), MODOC, NEVADA (west of the Sierra Nevada  
 Mountains), PLACER (west of the Sierra Nevada Mountains),  
 PLUMAS, SACRAMENTO, SHASTA, SIERRA (west of the Sierra Nevada  
 Mountains), SISKIYOU, SUTTER, TEHAMA, TRINITY, YOLO & YUBA  
 COUNTIES

	Rates	Fringes
Painters:.....	\$ 30.07	11.86

SPRAY/SANDBLAST: \$0.50 additional per hour.  
 EXOTIC MATERIALS: \$1.00 additional per hour.  
 HIGH TIME: Over 50 ft above ground or water level \$2.00  
 additional per hour. 100 to 180 ft above ground or water  
 level \$4.00 additional per hour. Over 180 ft above ground  
 or water level \$6.00 additional per hour.

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 PAIN0016-008 07/01/2009

MARIN, NAPA, SOLANO AND SONOMA COUNTIES

	Rates	Fringes
SOFT FLOOR LAYER.....	\$ 42.66	14.32

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 PAIN0169-004 07/01/2009

MARIN, NAPA & SONOMA COUNTIES; SOLANO COUNTY (west of a line  
 defined as follows: Hwy. 80 corridor beginning at the City of  
 Fairfield, including Travis Air Force Base and Suisun City;  
 going north of Manakas Corner Rd., continue north on Suisun  
 Valley Rd. to the Napa County line; Hwy. 80 corridor south on  
 Grizzly Island Rd. to the Grizzly Island Management area)

	Rates	Fringes
GLAZIER.....	\$ 40.76	16.91

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 \* PAIN0567-001 07/01/2008

EL DORADO COUNTY (east of the Sierra Nevada Mountains); LASSEN

COUNTY (east of Highway 395, beginning at Stacey and including Honey Lake); NEVADA COUNTY (east of the Sierra Nevada Mountains); PLACER COUNTY (east of the Sierra Nevada Mountains); AND SIERRA COUNTY (east of the Sierra Nevada Mountains)

Rates Fringes

Painters:

Brush and Roller.....	\$ 23.94	7.80
Spray Painter & Paperhanger..	\$ 24.79	7.80

PREMIUMS:

Special Coatings (Brush), and Sandblasting = \$0.50/hr  
 Special Coatings (Spray), and Steeplejack = \$1.00/hr  
 Special Coating Spray Steel = \$1.25/hr  
 Swing Stage = \$2.00/hr

\*A special coating is a coating that requires the mixing of 2 or more products.

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 PAIN0567-007 07/01/2009

EL DORADO COUNTY (east of the Sierra Nevada Mountains); LASSEN COUNTY (east of Highway 395, beginning at Stacey and including Honey Lake); NEVADA COUNTY (east of the Sierra Nevada Mountains); PLACER COUNTY (east of the Sierra Nevada Mountains) AND SIERRA COUNTY (east of the Sierra Nevada Mountains)

Rates Fringes

SOFT FLOOR LAYER.....	\$ 26.41	9.85
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 PAIN0567-010 10/01/2008

EL DORADO COUNTY (east of the Sierra Nevada Mountains); LASSEN COUNTY (east of Highway 395, beginning at Stacey and including Honey Lake); NEVADA COUNTY (east of the Sierra Nevada Mountains); PLACER COUNTY (east of the Sierra Nevada Mountains); AND SIERRA COUNTY (east of the Sierra Nevada Mountains)

Rates Fringes

Drywall

(1) Taper.....	\$ 25.19	8.30
(2) Steeplejack - Taper, over 40 ft with open space below.....	\$ 26.69	8.30

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 PAIN0767-004 01/01/2009

ALPINE, AMADOR, BUTTE, COLUSA, EL DORADO, GLENN, LASSEN, MODOC, NEVADA, PLACER, PLUMAS, SACRAMENTO, SHASTA, SIERRA, SISKIYOU, SOLANO (Remainder), SUTTER, TEHAMA, TRINITY, YOLO, YUBA

Rates Fringes

GLAZIER.....	\$ 33.28	15.70
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PAID HOLIDAYS: New Year's Day, Martin Luther King, Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day.

Employee required to wear a body harness shall receive \$1.50 per hour above the basic hourly rate at any elevation.

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 PAIN1176-001 07/01/2008

HIGHWAY IMPROVEMENT

	Rates	Fringes
Parking Lot Striping/Highway Marking:		
GROUP 1.....	\$ 28.11	13.12
GROUP 2.....	\$ 22.90	13.12
GROUP 3.....	\$ 22.18	13.12

CLASSIFICATIONS

GROUP 1: Striper: Layout and application of painted traffic stripes and marking; hot thermo plastic; tape, traffic stripes and markings

GROUP 2: Gamecourt & Playground Installer

GROUP 3: Protective Coating, Pavement Sealing

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PAIN1237-001 07/01/2009

ALPINE; COLUSA; EL DORADO (west of the Sierra Nevada Mountains); GLENN; LASSEN (west of Highway 395, beginning at Stacey and including Honey Lake); MODOC; NEVADA (west of the Sierra Nevada Mountains); PLACER (west of the Sierra Nevada Mountains); PLUMAS; SACRAMENTO; SHASTA; SIERRA (west of the Sierra Nevada Mountains); SISKIYOU; SUTTER; TEHAMA; TRINITY; YOLO AND YUBA COUNTIES

	Rates	Fringes
SOFT FLOOR LAYER.....	\$ 30.19	12.89

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PLAS0300-003 07/01/2008

	Rates	Fringes
PLASTERER		
AREA 295: Alpine, Amador, Butte, Colusa, El Dorado, Glenn, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Solano, Sutter, Tehema, Trinity, Yolo & Yuba Counties.....	\$ 32.82	14.50
AREA 355: Marin, Napa & Sonoma Counties.....	\$ 323.82	14.50

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PLAS0300-005 07/01/2006

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 25.88	15.03

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PLUM0038-002 07/01/2008

MARIN AND SONOMA COUNTIES

	Rates	Fringes
PLUMBER (Plumber, Steamfitter, Refrigeration Fitter)		
(1) Work on wooden frame structures 5 stories or less excluding high-rise buildings and commercial work such as hospitals, prisons, hotels, and schools.....	\$ 40.80	28.96
(2) All other work.....	\$ 51.00	31.44

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PLUM0038-006 07/01/2008

MARIN & SONOMA COUNTIES

	Rates	Fringes
Landscape/Irrigation Fitter (Underground/Utility Fitter).....	\$ 40.80	22.60

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PLUM0228-001 01/01/2009

BUTTE, COLUSA, GLENN, LASSEN, MODOC, PLUMAS, SHASTA, SIERRA,  
SISKIYOU, SUTTER, TEHAMA, TRINITY & YUBA COUNTIES

	Rates	Fringes
PLUMBER.....	\$ 34.50	17.93

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PLUM0343-001 07/01/2009

NAPA AND SOLANO COUNTIES

	Rates	Fringes
PLUMBER/PIPEFITTER		
Light Commercial.....	\$ 30.60	17.10
All Other Work.....	\$ 43.70	20.25

**DEFINITION OF LIGHT COMMERCIAL:**  
 Work shall include strip shopping centers, office buildings, schools and other commercial structures which the total plumbing bid does not exceed Two Hundred and Fifty Thousand (\$250,000) and the total heating and cooling does not exceed Two Hundred Fifty Thousand (\$250,000); or Any projects bid in phases shall not qualify unless the total project is less than Two Hundred Fifty Thousand (\$250,000) for the plumbing bid; and Two Hundred Fifty Thousand (\$250,000) for the heating and cooling bid. Excluded are hospitals, jails, institutions and industrial projects, regardless size of the project

FOOTNOTES: While fitting galvanized material: \$.75 per hour additional. Work from trusses, temporary staging, unguarded structures 35' from the ground or water: \$.75 per hour additional. Work from swinging scaffolds, boatswains chairs or similar devices: \$.75 per hour additional.

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PLUM0350-001 01/01/2007

EL DORADO COUNTY (Lake Tahoe area only); NEVADA COUNTY (Lake Tahoe area only); AND PLACER COUNTY (Lake Tahoe area only)

	Rates	Fringes
PLUMBER/PIPEFITTER.....	\$ 25.93	15.02

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PLUM0355-001 07/01/2009

ALPINE, AMADOR, BUTTE, COLUSA, EL DORADO, GLENN, LASSEN, MODOC,  
NAPA, NEVADA, PLACER, PLUMAS, SACRAMENTO, SHASTA, SIERRA,  
SISKIYOU, SOLANO, SUTTER, TEHAMA, TRINITY, YOLO, AND YUBA  
COUNTIES

	Rates	Fringes
Underground Utility Worker /Landscape Fitter.....	\$ 27.35	6.85

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PLUM0442-003 01/01/2009

AMADOR (South of San Joaquin River) and ALPINE COUNTIES

	Rates	Fringes
PLUMBER.....	\$ 34.50	17.93
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PLUM0447-001 07/01/2008		

AMADOR (north of San Joaquin River), EL DORADO (excluding Lake Tahoe area), NEVADA (excluding Lake Tahoe area); PLACER (excluding Lake Tahoe area), SACRAMENTO AND YOLO COUNTIES

	Rates	Fringes
PLUMBER/PIPEFITTER		
Journeyman.....	\$ 39.32	13.45
Light Commercial Work.....	\$ 29.78	9.57
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ROOF0081-006 08/01/2007		

MARIN, NAPA, SOLANO AND SONOMA COUNTIES

	Rates	Fringes
Roofer.....	\$ 28.95	12.65
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ROOF0081-007 08/01/2007		

ALPINE, BUTTE, COLUSA, EL DORADO, GLENN, LASSEN, MODOC, NEVADA, PLACER, PLUMAS, SACRAMENTO, SHASTA, SIERRA, SISKIYOU, SUTTER, TEHAMA, TRINITY, YOLO, AND YUBA COUNTIES

	Rates	Fringes
Roofer.....	\$ 22.82	13.88
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SFCA0483-003 01/01/2009		

MARIN, NAPA, SOLANO AND SONOMA COUNTIES

	Rates	Fringes
SPRINKLER FITTER (Fire Sprinklers).....	\$ 45.59	19.95
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SFCA0669-003 01/01/2009		

ALPINE, BUTTE, COLUSA, EL DORADO, GLENN, LASSEN, MODOC, NEVADA, PLACER, PLUMAS, SACRAMENTO, SHASTA, SIERRA, SISKIYOU, SUTTER, TEHAMA, TRINITY, YOLO AND YUBA COUNTIES

	Rates	Fringes
SPRINKLER FITTER.....	\$ 32.65	16.05
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* SHEE0104-006 07/01/2009		

MARIN, NAPA, SOLANO SONOMA & TRINITY COUNTIES

	Rates	Fringes
Sheet Metal Worker		
Mechanical Contracts		
\$200,000 or less.....	\$ 43.32	26.40
All other work.....	\$ 47.73	26.67
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* SHEE0104-014 07/01/2009		

MARIN, NAPA, SOLANO, SONOMA AND TRINITY COUNTIES

	Rates	Fringes
US 50/Missouri Flat Road Interchange Improvements Phase 1B		
<b>Contract No. 71336</b>		
September 15, 2009		

SHEET METAL WORKER (Metal Decking and Siding only).....\$ 33.43      24.31

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\* SHEE0162-006 07/01/2009

AMADOR, COLUSA, EL DORADO, NEVADA, PLACER, SACRAMENTO, SUTTER, YOLO AND YUBA COUNTIES

	Rates	Fringes
SHEET METAL WORKER.....	\$ 36.31	21.61

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\* SHEE0162-007 07/01/2009

AIPINE COUNTY

	Rates	Fringes
SHEET METAL WORKER.....	\$ 31.06	19.68

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SHEE0162-008 07/01/2005

BUTTE, COLUSA, EL DORADO, GLENN, LASSEN, MODOC, NEVADA, PLACER, PLUMAS, SACRAMENTO, SHASTA, SIERRA, SISKIYOU, SUTTER, TEHAMA, YOLO AND YUBA COUNTIES

	Rates	Fringes
Sheet Metal Worker (Metal decking and siding only).....	\$ 32.84	15.20

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\* SHEE0162-014 07/01/2009

BUTTE, GLENN, LASSEN, MODOC, PLUMAS, SHASTA, SIERRA, SISKIYOU AND TEHAMA COUNTIES

	Rates	Fringes
SHEET METAL WORKER Mechanical Jobs \$200,000 & under.....	\$ 27.90	20.89
Mechanical Jobs over \$200,000.....	\$ 36.31	21.61

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TEAM0094-001 07/01/2009

	Rates	Fringes
Truck drivers:		
GROUP 1.....	\$ 27.13	18.99
GROUP 2.....	\$ 27.43	18.99
GROUP 3.....	\$ 27.73	18.99
GROUP 4.....	\$ 28.08	18.99
GROUP 5.....	\$ 28.43	18.99

**FOOTNOTES:**

Articulated dump truck; Bulk cement spreader (with or without auger); Dumpcrete truck; Skid truck (debris box); Dry pre-batch concrete mix trucks; Dumpster or similar type; Slurry truck: Use dump truck yardage rate.  
Heater planer; Asphalt burner; Scarifier burner; Industrial lift truck (mechanical tailgate); Utility and clean-up truck: Use appropriate rate for the power unit or the equipment utilized.

**TRUCK DRIVER CLASSIFICATIONS**

GROUP 1: Dump trucks, under 6 yds.; Single unit flat rack (2-axle unit); Nipper truck (when flat rack truck is used appropriate flat rack shall apply); Concrete pump truck



(when flat rack truck is used appropriate flat rack shall apply); Concrete pump machine; Fork lift and lift jitneys; Fuel and/or grease truck driver or fuel person; Snow buggy; Steam cleaning; Bus or personhaul driver; Escort or pilot car driver; Pickup truck; Teamster oiler/greaser and/or serviceperson; Hook tender (including loading and unloading); Team driver; Tool room attendant (refineries)

GROUP 2: Dump trucks, 6 yds. and under 8 yds.; Transit mixers, through 10 yds.; Water trucks, under 7,000 gals.; Jetting trucks, under 7,000 gals.; Single-unit flat rack (3-axle unit); Highbed heavy duty transport; Scissor truck; Rubber-tired muck car (not self-loaded); Rubber-tired truck jumbo; Winch truck and "A" frame drivers; Combination winch truck with hoist; Road oil truck or bootperson; Buggymobile; Ross, Hyster and similar straddle carriers; Small rubber-tired tractor

GROUP 3: Dump trucks, 8 yds. and including 24 yds.; Transit mixers, over 10 yds.; Water trucks, 7,000 gals. and over; Jetting trucks, 7,000 gals. and over; Vacuum trucks under 7500 gals. Trucks towing tilt bed or flat bed pull trailers; Lowbed heavy duty transport; Heavy duty transport tiller person; Self-propelled street sweeper with self-contained refuse bin; Boom truck - hydro-lift or Swedish type extension or retracting crane; P.B. or similar type self-loading truck; Tire repairperson; Combination bootperson and road oiler; Dry distribution truck (A bootperson when employed on such equipment, shall receive the rate specified for the classification of road oil trucks or bootperson); Ammonia nitrate distributor, driver and mixer; Snow Go and/or plow

GROUP 4: Dump trucks, over 25 yds. and under 65 yds.; Water pulls - DW 10's, 20's, 21's and other similar equipment when pulling Aqua/pak or water tank trailers; Helicopter pilots (when transporting men and materials); Lowbed Heavy Duty Transport up to including 7 axles; DW10's, 20's, 21's and other similar Cat type, Terra Cobra, LeTourneau Pulls, Tournorocker, Euclid and similar type equipment when pulling fuel and/or grease tank trailers or other miscellaneous trailers; Vacuum Trucks 7500 gals and over and truck repairman

GROUP 5: Dump trucks, 65 yds. and over; Holland hauler; Low bed Heavy Duty Transport over 7 axles

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.  
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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.  
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#### WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

**ATTACHMENT B – ELECTRONIC USAGE FORM**

**ELECTRONIC FILES USAGE ACKNOWLEDGMENT  
US 50/Missouri Flat Road Interchange Improvements Phase 1B  
Contract No. 71336**

Whereas, the party executing this Electronic Files Usage Acknowledgment (“Recipient”) has requested electronic copies of the cross sections in Microstation format (.dgn) (“Electronic Files”) for the above-referenced project (“Project”) for purpose of preparing its bid.

Whereas, the County of El Dorado (“County”) has agreed to provide Recipient with the Electronic Files only upon Recipient’s acknowledgment of and agreement to abide by the terms and conditions contained herein.

Therefore, Recipient hereby acknowledges and agrees to abide by the following terms and conditions:

1. Recipient is authorized to use the Electronic Files for the sole purpose of preparing its proposal for the Project. Said Electronic Files are not to be used by Recipient for any other aspect of the Project nor for any other project. By providing Recipient with a copy of the Electronic Files, neither the County nor the County’s design consultant grant Recipient any ownership or copyright in the Electronic Files. County and/or the County’s design consultant shall be deemed the author(s) of the Electronic Files and will retain all common law, statutory, and other reserved rights, in addition to the copyrights.

2. It is Recipient’s responsibility to verify all aspects of the Electronic Files against the signed or sealed hard-copy construction documents. In the event of a conflict between the signed or sealed construction documents and the Electronic Files, the signed or sealed hard-copy construction documents shall govern.

3. Recipient releases the County and the County’s design consultant, Quincy Engineering, Inc. (“QEI”), from any liability arising from modifications to Electronic Files made by Recipient or its agents and for reuse of the files for any purpose other than the purposes stated herein.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Company

\_\_\_\_\_  
Title

Desired Method of Transmittal:

Email files to: \_\_\_\_\_

Upload files to ftp site: Address: \_\_\_\_\_ Password: \_\_\_\_\_

Mail files on CD to: \_\_\_\_\_